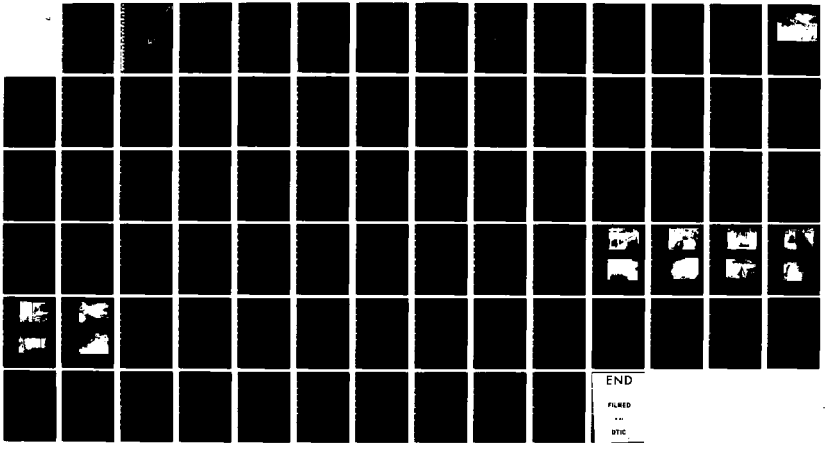
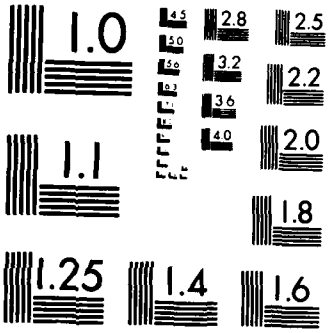
AD-A143 494 NATIONAL PROGRAM FOR INSPECTION OF NON-FEDERAL DAMS 1/1
DOBSONVILLE DAM (CT 0.. (U) CORPS OF ENGINEERS WALTHAM
MA NEW ENGLAND DIV MAY 80

UNCLASSIFIED F/G 13/13 NL





CONNECTICUT RIVER BASIN
VERNON , CONNECTICUT

DOBSONVILLE DAM
CT 00210

PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEER
WALTHAM , MASS. 02154

MAY 1980

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER CT 00210	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Dobsonville Dam NATIONAL PROGRAM FOR INSPECTION OF NON-FEDERAL DAMS		5. TYPE OF REPORT & PERIOD COVERED INSPECTION REPORT 6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) U.S. ARMY CORPS OF ENGINEERS NEW ENGLAND DIVISION		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS DEPT. OF THE ARMY, CORPS OF ENGINEERS NEW ENGLAND DIVISION, NEDED 424 TRAPELO ROAD, WALTHAM, MA. 02254		12. REPORT DATE May 1980 13. NUMBER OF PAGES 55
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)		15. SECURITY CLASS. (of this report) UNCLASSIFIED 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

APPROVAL FOR PUBLIC RELEASE: DISTRIBUTION UNLIMITED

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

Cover program reads: Phase I Inspection Report, National Dam Inspection Program; however, the official title of the program is: National Program for Inspection of Non-Federal Dams; use cover date for date of report.

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

DAMS, INSPECTION, DAM SAFETY,

Conn. River Basin
Vernon, Conn.
Dobsonville Dam

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Dobsonville Dam is a run of the river stone masonry gravity dam. The total length of the dam is 84 ft. with a maximum height of 26 ft. The crest width of the dam is 10 ft. Based on the visual inspection, the Dobsonville Dam and its appurtenances are judged to be in fair condition. For the combination of dam size (small) and downstream hazard potential (significant), a range in the magnitude of the spillway test flood of the 100 year flood event to the ½ PMF is given.

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02154

REPLY TO
ATTENTION OF:
NEDED

SEP 5 19..

Honorable Ella T. Grasso
Governor of the State of Connecticut
State Capitol
Hartford, Connecticut 06115

Dear Governor Grasso:

Inclosed is a copy of the Dobsonville Dam Phase I Inspection Report, which was prepared under the National Program for Inspection of Non-Federal Dams. This report is presented for your use and is based upon a visual inspection, a review of the past performance and a brief hydrological study of the dam. A brief assessment is included at the beginning of the report. I have approved the report and support the findings and recommendations described in Section 7 and ask that you keep me informed of the actions taken to implement them. This follow-up action is a vitally important part of this program.

A copy of this report has been forwarded to the Department of Environmental Protection, the cooperating agency for the State of Connecticut. In addition, a copy of the report has also been furnished the owner, Mr. John Talcott, Sandwich Road, Plymouth, Massachusetts 02360.

Copies of this report will be made available to the public, upon request, by this office under the Freedom of Information Act. In the case of this report the release date will be thirty days from the date of this letter.

I wish to take this opportunity to thank you and the Department of Environmental Protection for your cooperation in carrying out this program.

Sincerely,

MAX B. SCHEIDER
Colonel, Corps of Engineers
Division Engineer

Incl
As stated

DOBSONVILLE DAM

CT 00210

CONNECTICUT RIVER BASIN

VERNON, CONNECTICUT

PHASE I INSPECTION REPORT

NATIONAL DAM INSPECTION PROGRAM

NATIONAL DAM INSPECTION PROGRAM
PHASE I INSPECTION REPORT

Identification No.:	Ct 00210
Name of Dam:	Dobsonville Dam
Town:	Vernon
County and State:	Tolland, Connecticut
Stream:	Tankerhoosen River
Date of Inspection:	7 November, 1979

BRIEF ASSESSMENT

Dobsonville Dam is a run of the river stone masonry gravity dam. The total length of the dam is 84 feet with a maximum height of 26 feet. The crest width of the dam is approximately 10 feet. The centrally located spillway is 62 feet in length. The stones forming the crest of the spillway are connected with metal rods.

The dam was originally constructed to provide water power for a mill, however the pond is now used for passive recreation only. Dobsonville Dam has a storage volume of 125 acre-feet and a maximum dam height of 26 feet; the size classification is thus "small." In the event of a dam failure an industrial building would be inundated by about 1 foot of water. With the possibility of few lives lost and the probability of appreciable economic losses, the dam has been classified as having a "significant" hazard potential.

Based on the visual inspection, the Dobsonville Dam and its appurtenances are judged to be in fair condition.

The vertical and horizontal alignment was good. Trees are located at the abutments with roots growing into the stone masonry face. Seepage was observed eminating through the downstream face. Water was overflowing the spillway at the time of inspection.

For the combination of dam size (small) and downstream hazard potential (significant), a range in the magnitude of the spillway test flood of the 100 year flood event to the 1/2 PMF is given. A test flood of the 100 year flood was selected for this project. The maximum spillway capacity without overtopping the dam is 342 CFS. The capacity of the spillway is inadequate to pass the 100 year test flood outflow of 4290 CFS and would overtop the dam by 5.7 feet. The spillway is adequate to pass only 8

percent of the spillway test flood outflow without overtopping the dam.

Within one year of the receipt of the Phase I Inspection Report, the owner should retain a qualified registered engineer to accomplish the following: 1) Investigate the seepage occurring through the downstream face and design corrective measures, if needed. 2) Conduct more refined hydrologic and hydraulic analysis to determine the need for and methods of increasing the project discharge capacity. 3) Provide provisions for a low level outlet or other means of dewatering the pond during an emergency. 4) Inspect the spillway during "no flow" conditions. The owner should carry out the recommendations made by the engineer.

The owner should also carry out the following operational and maintenance procedures: 1) Remove trees growing adjacent to the dam at both abutments. 2) Institute a program of annual technical inspection of the dam and its appurtenances by a qualified registered engineer and 3) Establish a surveillance program for use during and immediately after heavy rainfall, and also a warning program to follow in case of emergency conditions.

S. Giavara, P.E.
President

Registered CT 7634

This Phase I Inspection Report on Dobsonville Dam has been reviewed by the undersigned Review Board members. In our opinion, the reported findings, conclusions, and recommendations are consistent with the Recommended Guidelines for Safety Inspection of Dams, and with good engineering judgment and practice, and is hereby submitted for approval.

Richard J. DiBuono

RICHARD DIBUONO, MEMBER
Water Control Branch
Engineering Division

ARAMAST MAHTESIAN, MEMBER
Geotechnical Engineering Branch
Engineering Division

Carney M. Terzian

CARNEY M. TERZIAN, CHAIRMAN
Design Branch
Engineering Division

APPROVAL RECOMMENDED:

Joe B. Fryar

JOE B. FRYAR
Chief, Engineering Division

PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I Investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation, and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I investigation: however, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the Spillway Test flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. Because of the magnitude and rarity of such a storm event, a finding that a spillway will not pass the test flood should not be interpreted as necessarily posing a highly inadequate condition. The test flood provides a measure of relative spillway capacity and serves as an aide in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

The Phase I Investigation does not include an assessment of the need for fences, gates, no-trespassing signs, repairs to existing fences and railings and other items which may be needed to minimize trespass and provide greater security for the facility and safety to the public. An evaluation of the project for compliance with OSHA rules and regulations is also excluded.

TABLE OF CONTENTS

Section			Page
Letter of Transmittal			
Brief Assessment			
Review Board Page			
Preface			i
Table of Contents			ii - iv
Overview Photo			v
Location Map			vi
REPORT			
1. PROJECT INFORMATION			
	1.1 General		
		a. Authority	1
		b. Purpose of Inspection	1
	1.2 Description of Project		
		a. Location	1
		b. Description of Dam and Appurtenances	1-2
		c. Size Classification	2
		d. Hazard Classification	2
		e. Ownership	2
		f. Operator	2
		g. Purpose of Dam	2
		h. Design and Construction History	2
		i. Normal Operational Procedure	2
	1.3 Pertinent Data		2-5
2. ENGINEERING DATA			
	2.1 Design Data		6
	2.2 Construction Data		6
	2.3 Operation Data		6
	2.4 Evaluation of Data		6

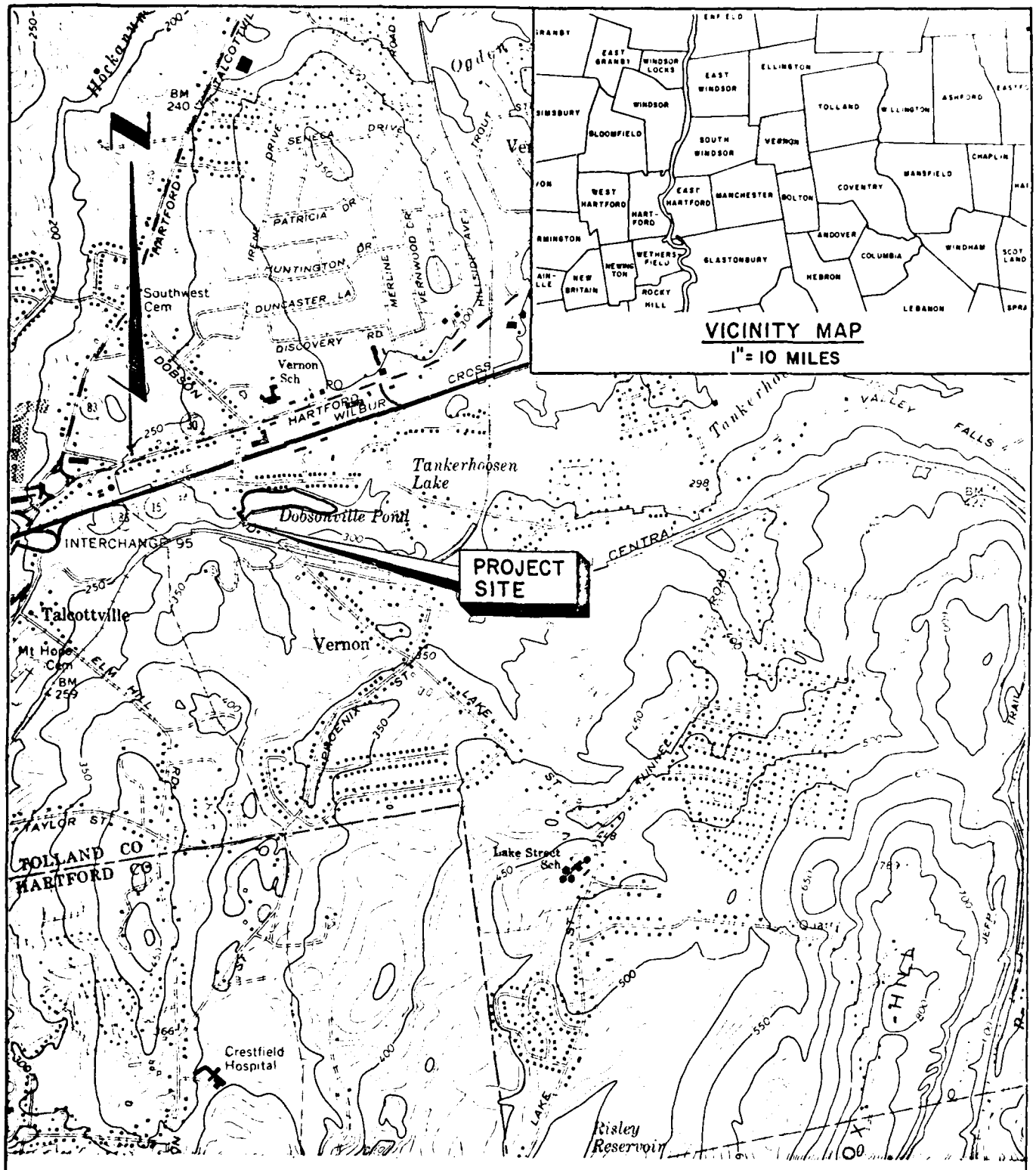
Section		Page
3.	VISUAL INSPECTION	
	3.1 Findings	
	a. General	7
	b. Dam	7-8
	c. Appurtenant Structures	8
	d. Reservoir Area	8
	e. Downstream Channel	8
	3.2 Evaluation	8
4.	OPERATIONAL AND MAINTENANCE PROCEDURES	
	4.1 Operational Procedures	
	a. General	9
	b. Description of any Warning System in Effect	9
	4.2 Maintenance Procedures	
	a. General	9
	b. Operating Facilities	9
	4.3 Evaluation	9
5.	EVALUATION OF HYDRAULIC/HYDROLOGIC FEATURES	
	5.1 General	10
	5.2 Design Data	10
	5.3 Experience Data	10
	5.4 Test Flood Analysis	10-11
	5.5 Dam Failure Analysis	11-12
6.	EVALUATION OF STRUCTURAL STABILITY	
	6.1 Visual Observation	13
	6.2 Design and Construction Data	13
	6.3 Post-Construction Changes	13
	6.4 Seismic Stability	13

Section		Page
7.	ASSESSMENT, RECOMMENDATIONS AND REMEDIAL MEASURES	
7.1	Dam Assessment	
	a. Condition	14
	b. Adequacy of Information	14
	c. Urgency	14
7.2	Recommendations	
7.3	Remedial Measures	14-15
	a. Operation and Maintenance Procedures	
7.4	Alternatives	15

APPENDIXES

Appendix	Description
A	INSPECTION CHECKLIST
B	ENGINEERING DATA
C	PHOTOGRAPHS
D	HYDROLOGIC AND HYDRAULIC COMPUTATIONS
E	INFORMATION AS CONTAINED IN THE NATIONAL INVENTORY OF DAMS

OVERVIEW PHOTO
Dobsonville Dam



DOBSONVILLE DAM
LOCATION MAP
VERNON , CONNECTICUT

FLAHERTY • GIAVARA ASSOCIATES, P.C.

NATIONAL DAM INSPECTION PROGRAM
PHASE I INSPECTION REPORT
DOBSONVILLE DAM - CT 00210

SECTION 1 - PROJECT INFORMATION

1.1 GENERAL:

a. Authority. Public Law 92-367, August 8, 1972, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a national program of dam inspection through the United States. The New England Division of the Corps of Engineers has been assigned the responsibility of supervising the inspection of dams within the New England Region. Flaherty Giavara Associates, P.C. has been retained by the New England Division to inspect and report on selected dams in the State of Connecticut. Authorization and notice to proceed was issued to Flaherty Giavara Associates, P.C. under a letter of 19 October 1979 from William E. Hodgson, Jr., Colonel, Corps of Engineers. Contract No. DACW33-80-C-0001 has been assigned by the Corps of Engineers for this work.

b. Purpose.

1) Perform technical inspection and evaluation of non-federal dams to identify conditions which threaten the public safety and thus permit correction in a timely manner by non-federal interests.

2) Encourage and assist the States to initiate quickly effective dam safety programs for non-federal dams.

3) To update, verify and complete the National Inventory of Dams.

1.2 DESCRIPTION OF THE PROJECT:

a. Location. Dobsonville Dam is located in Vernon Connecticut approximately 1 1/2 miles southwest of Vernon Center and 3/4 miles east of the Village of Talcottville. Access to the dam is from Dobson Street. The reservoir is shown on the U.S.G.S. Topographic Map "Rockville, Connecticut" at a latitude of 41°49' 30" and a longitude of 72°29'15". The Location Map on page vi shows the location of the dam.

b. Description of Dam and Appurtenances. Dobsonville Dam is a run of river stone masonry gravity dam. The total length of the dam is 84 feet with a maximum height of 26 feet. The crest width of the dam is approximately 10 feet. The crest of the dam to the left of the spillway varies in elevation (7 feet @ El. 248,5 feet @ El. 252). To the right of the spillway the dam is

10 feet in length at El. 248.5. The upstream face of the dam was not visible for inspection. The downstream face of the stone masonry dam is vertical.

The spillway occupies 62 feet of the run of the river stone masonry dam. The crest elevation is 247 feet NGVD. The spillway crest cap stones are 4 feet x 4 feet x 1 feet deep. The stones are connected with metal rods. The spillway training walls are constructed of stone masonry at each end of the spillway crest. The downstream river channel is lined with bedrock.

An opening in the downstream face of the dam near the left abutment appears to be a sluiceway outlet. The intake nor the control of this outlet works could be located. It is assumed that this outlet works is inoperable. An abandoned headrace and penstock are located south of the dam. These facilities which are inoperable were originally associated with a factory on the site.

c. Size Classification. Dobsonville Dam has a storage volume of 125 acre-feet and maximum dam height of 26 feet. Storage of greater than 50 acre-feet and less than 1000 acre feet and a dam height of greater than 25 feet but less than 40 feet classifies this structure in the "small" category according to guidelines established by the Corps of Engineers.

d. Hazard Classification. The dam is classified as having a "significant" hazard potential. An industrial building in the Village of Talcottville would be inundated by about 1 foot of water. Loss of life is estimated to be few and economic loss appreciable in the event of a dam failure.

e. Ownership. The dam is owned by Mr. John Talcott, Sandwich Road, Plymouth, Massachusetts 02360, Phone: 617-746-1120.

f. Operator. The operator of the dam is Mr. John Talcott, Sandwich Road, Plymouth, Massachusetts 02360, Phone: 617-746-1120.

g. Purpose of the Dam. Presently the dam impounds water for Dobsonville Pond which is utilized for passive recreation. Historically, water was utilized at the site to provide power to a factory.

h. Design and Construction History. No available design or construction information was available for this dam. It is assumed it was constructed in the 19th century along with other mills and dams along the river.

i. Normal Operational Procedures. There are no operational outlet works at this dam. Therefore the pond level is maintained by the spillway crest elevation.

1.3 PERTINENT DATA:

a. Drainage Area. The drainage area is 10.7 square miles of upland wooded terrain. The land use of the developed

portions of the watershed is low density residential.

b. Discharge at Dam Site.

1) There are no outlet works which are operable at the dam. An opening on the downstream face of the dam appears to be the original low level outlet. The inlet or control mechanism of this outlet works was not visible.

2) There are no known records of past floods or flood stage heights at the dam.

3) The ungated spillway capacity at the top of dam - 342 CFS @ El. 248.5.

4) The ungated spillway capacity at the test flood elevation - 3600 CFS @ El. 254.2.

5) The gated spillway capacity at normal pool elevation is not applicable at this dam.

6) The gated spillway capacity at test flood elevation is not applicable at this dam.

7) The total spillway capacity at test flood elevation - 3600 CFS @ El. 254.2.

8) The total project discharge at the top of dam - 186 CFS @ El. 248.5.

9) The total project discharge at test flood elevation - 4290 CFS @ El. 254.2.

c. Elevations. (Feet above National Geodetic Vertical Datum: NGVD)

1) Streambed at toe of dam.....222±

2) Bottom of cut-off.....Unknown

3) Maximum tailwater.....225±

4) Recreation pool.....N/A

5) Full flood control pool.....N/A

6) Spillway crest.....247±

7) Design surcharge.....Unknown

8) Top of dam.....248.5

9) Test flood surcharge.....254.2±

d. Reservoir. (Length in Feet)

1) Normal pool.....1300±

2) Flood control pool.....N/A

3) Spillway crest pool.....1300±

4) Top of dam.....1350±

5) Test flood pool.....1400±

e. Storage. (acre-feet)

1) Normal pool.....90

2) Flood control pool.....N/A

3) Spillway crest pool.....90

4) Top of dam.....125

5) Test flood pool.....135

f. Reservoir Surface. (acres)

1) Normal pool.....5.5

2) Flood control pool.....N/A

3) Spillway crest.....5.5

4) Test flood pool.....10

5) Top of dam.....6

g. Dam.

1)	Type:	Run of river-stone masonry gravity dam.
2)	Length:	84 feet
3)	Height:	26 feet
4)	Top Width:	10 feet
5)	Side Slopes:	U/S-Unknown D/S-vertical
6)	Zoning:	Unknown
7)	Impervious Core:	Unknown

8)	Cut-off:	Unknown
9)	Grout Curtain:	Unknown

h. Diversion and Regulating Tunnel.

1)	Type:	Abandoned headrace and penstock.
2)	Length:	Not available.
3)	Closure:	Not available.
4)	Access:	Not available.
5)	Regulating Facilities:	Not available.

i. Spillway.

1)	Type:	Stone masonry
2)	Length of Weir:	62 feet
3)	Crest Elevation:	247 feet NGVD
4)	Gates:	None
5)	U/S Channel:	River
6)	D/S Channel:	Bedrock lined stream

j. Regulating Outlets.

1)	Invert:	240 feet NGVD
2)	Size:	2' x 4'
3)	Description:	Sluiceway outlet
4)	Control Mechanism:	Not located

SECTION 2 - ENGINEERING DATA

2.1 DESIGN:

No design data is available for this dam.

2.2 CONSTRUCTION:

No information relative to the construction of the dam is available. Information presented in this report was primarily obtained by interviews and direct field measurements of the existing dam.

2.3 OPERATION DATA:

Formal operation records are not available for this dam.

2.4 EVALUATION:

a. Availability. There are no plans, specifications or computations available from the Owner or State regarding the design, construction or subsequent repairs and modifications to this dam.

b. Adequacy. The lack of in-depth engineering data did not allow for a definitive review. Therefore, the adequacy of this dam could not be assessed from the standpoint of reviewing design and construction data, but is based primarily on visual inspections, past performance and sound engineering judgment.

c. Validity. There is no reason to question the validity of the available data.

SECTION 3 - VISUAL INSPECTION

3.1 FINDINGS:

a. General. Based on the visual inspection, the Dobsonville Dam and its appurtenances are judged to be in fair condition. The dam is a run of the river structure with a full crest spillway. The dam is a stone masonry gravity structure. The base and abutments of the dam are founded on bedrock. Water was overflowing the spillway at the time of inspection.

The vertical and horizontal alignment was good. Trees are located at the abutments with roots growing into the stone masonry face. Seepage was observed eminating through the downstream face.

b. Dam.

1) Upstream Face - The upstream face at the dam was below the pond level and not visible at the time of the inspection. (See Photo No. 2)

2) Downstream Face - The downstream face of the dam consists of a vertical stone masonry face, as shown in Photos No. 1 and No. 8. The condition of the stone masonry was largely obscured by the spillway flow, however the joints between the stones were observed to be unmortared (or the mortar had been displaced), as shown in Photos No. 8 and No. 9. Seepage through the unmortared joints in the stone masonry face was observed in several locations, as shown in Photo No. 8. The full extent of the seepage through the downstream face could not be determined because of the water flowing over the spillway.

There is a large rock outcrop at the downstream toe of the dam, extending from the right abutment to approximately the center of the dam, as shown in Photos No. 3 and No. 5. This outcrop does not appear to be obstructing the spillway flow or to be diverting the flow so as to cause erosion damage to the dam or abutments.

3) Abutments - The abutments of the dam are almost entirely in rock, as shown in Photos No. 3, No. 4 and No. 6. No seepage through the rock abutments was observed.

The amphibolite bedrock at the dam site has a strong foliation cleavage. In the left abutment, this cleavage dips toward the downstream channel. This orientation has apparently resulted in some minor fallout of rock along the cleavage surfaces (See Photo No. 4) but no evidence of large scale movements was observed. The cleavage dips into the rock slope at the right abutment, which is favorable with respect to stability.

Several trees are growing adjacent to the dam at the abutments, as shown in Photos No. 1, No. 4 and No. 6. Some of these trees

have roots growing into the stone masonry of the downstream face.

4) Spillway - The spillway has no training walls other than a short 4-ft stone masonry section at each end of the spillway crest. See Photo No. 1. The front view of the spillway is shown in Photos No. 5 and No. 7. Downstream from the crest, the spillway flow is channeled by the rock abutments and the rock slopes of the downstream river channel.

c. Appurtenant Structures. The dam has no known controlled outlet other than the abandoned outlet works associated with past mill operations at the site. The abandoned outlet works consist of an upstream headrace leading to an abandoned penstock located downstream of the left abutment. There is also an opening in the downstream face near the left abutment which appears to be a sluiceway outlet (See Photo No. 10) but the location of the intake associated with this apparent sluiceway outlet is not known.

d. Reservoir Area. The perimeter of the reservoir varies from flat and landscaped to moderate and wooded. There is no evidence of slides or slope failures. No sediment deposits were observed above the water level of the reservoir (see Photo No. 12.) A highway bridge over the reservoir (upstream of the dam) does not significantly affect flow rates or stages at the dam.

e. Downstream Channel. The channel is a natural riverbed with bedrock slopes and a bedrock, boulder, cobble bottom. The banks of the channel are wooded and appear stable (see Photo No. 11).

3.2 EVALUATION:

Based on the visual inspection, the dam appears to be in fair condition. However, the inspection disclosed the following items which require attention:

a. Seepage was observed through unmortared joints in the stone masonry downstream face. The full extent of the seepage could not be determined because of the water overflowing the spillway which obscured most of the face.

b. Several trees growing adjacent to the dam at both abutments have roots growing into the stone masonry face of the dam, which could eventually dislodge portions of the stone masonry.

SECTION 4 - OPERATIONAL AND MAINTENANCE PROCEDURES

4.1 OPERATIONAL PROCEDURES:

a. General. The water level for Dobsonville Pond is uncontrolled. Normal operating procedure allows all discharges to pass over the uncontrolled spillway with the outlet works closed.

b. Description of any Warning System in Effect. There is no warning system of any kind in effect at the dam. There are no formal emergency operation plans in effect for lowering the water level in anticipation of severe storms.

4.2 MAINTENANCE PROCEDURES:

a. General. Maintenance of the dam appears to be completely lacking.

b. Operating Facilities. There are no formal maintenance procedures followed for the operating facilities.

4.3 EVALUATION:

Regular operational maintenance for this dam and its appurtenances has not been developed or implemented.

An emergency action plan should be prepared to prevent or minimize the impact of failure. This plan should list the expedient action to be taken and authorities to be contacted.

SECTION 5 - EVALUATION OF HYDRAULIC/HYDROLOGIC FEATURES

5.1 GENERAL:

The Dobsonville Pond Dam is a stone masonry structure with an overflow section. The crest length of the dam is 84 feet; its height is 26 feet. The spillway crest consists of large blocks of rock tied together with metal anchor straps.

The spillway discharges over a broad crest directly into a natural channel that has bedrock sides and bed.

The watershed area is 10.7 square miles of upland terrain that is well wooded. The majority of the land within the watershed is presently low density residential.

5.2 DESIGN DATA:

No specific design data is available for this watershed or the structures of Dobsonville Pond Dam. In lieu of existing design information, U.S.G.S. Topographic Maps (scale 1" = 2000') were used to develop hydrologic parameters. Some of the pertinent hydraulic design data was obtained and/or confirmed by actual field measurements at the time of visual field inspection. Other data was obtained from a report on an upstream dam entitled "Report to the State of Connecticut on Tankerhoosen Pond Dam," by Hayden, Harding, & Buchanan, Inc. August 1979.

5.3 EXPERIENCE DATA:

Historical data for recorded discharges is not available for this dam. The Tankerhoosen Pond Dam Report estimates that the peak flow of the 1938 hurricane would have been 770 CFS, while the August 1955 hurricane peak flow is estimated to be 960 CFS.

5.4 TEST FLOOD ANALYSIS:

The test flood for determining the spillway adequacy is based upon Corps of Engineers guidelines. The size classification of the dam is "small" based upon a height of 26 feet and storage volume of 125 acre-feet. The hazard potential is "significant" due to the land use downstream of the dam. The test flood required by Corps of Engineers guidleines for this size dam and hazard potential can range from the 100 year flood event to the 1/2 Probable Maximum Flood (PMF).

The test flood selected for this project is the 100 year flood, due to the possibliity of some loss of life and the probability of appreciable economic loss due to dam failure. The relative

size of the dam and reservoir area was taken into account when selecting the spillway test flood.

The one hundred flood is assumed to be equal to the 1/4 PMF. The magnitude of the PMF (and 1/4 PMF test flood) is based upon "Preliminary Guidance for Estimating PMF Discharges" by the New England Division, Corps of Engineers, dated December, 1977. The watershed is rolling, and has limited floodwater storage areas in natural wetlands and impoundments. The flood magnitude was thus based on the "rolling" watershed curve. The 100 year flood peak flow rate is estimated to be 4420 CFS.

The maximum spillway capacity is 342 CFS, without overtopping the dam (a stage of 1.5 above the spillway crest El. 247.0). The test flood was formed into a triangular hydrograph with a peak inflow of 4420 CFS and a duration of 12.9 hours. The duration was selected so that the triangular hydrograph would contain the same volume of water as the estimated flood runoff.

The hydrograph was routed through the reservoir using a computer program based on stage-storage and stage-discharge data. The reservoir was assumed to be full with a water surface level with the spillway prior to the flood event. The results of the flood routing computations indicate that the test flood peak inflow rate of 4420 CFS is reduced to a peak outflow rate of 4290 CFS by the storage characteristics of the reservoir.

The peak flood stage at the spillway is at elevation 254.2, which is 5.7 feet above the right abutment. The duration of the overflow is estimated to be 10 hours. The spillway can pass 8 percent of the test flood outflow. It is not known whether the dam will fail if overtopped by the test flood since the dam is a gravity masonry structure intended to be overtopped, and the abutments have exposed bedrock.

5.5 DAM FAILURE ANALYSIS:

The downstream impact of dam failure was analysed using a computer program developed based upon the Corps of Engineers "Rule of Thumb Guidance for Estimating Dam Failure Hydrographs" dated April, 1978 as used in the National Dam Inspection Program.

The peak outflow rate is calculated by combining the dam failure outflow and the pre-failure discharge. Water surface elevations are calculated for both the pre-failure and post-failure conditions at selected stations downstream of the dam. The output data (see Appendix D) is used to define flood prone areas and select the hazard classification of the dam.

Based upon an assumed breach width of 33 feet, which is equal to 40% of the dam's width at mid-height, the peak flood flow due to failure would be 7350 CFS with a total flow (base flow

plus failure outflow) of 7600 CFS. The initial depth of the total flow is 14 feet above the stream bed, at a point 90 feet downstream of the dam.

Using topography data from U.S.G.S. maps, the evaluation indicates that the dam failure floodwave would move rapidly down the steep valley of Tankerhoosen River, and then spread out laterally on the broad floodplain of the Hockanum River.

The flood hazard area is generally quite narrow due to the steep valley sides and the limited width of the flood plain. The flood hazard area includes a large industrial building in the village of Talcottville, 3700± feet downstream of the dam, which would have its ground floor inundated by about 1 foot of water. It is not subject to flooding by the baseflow. A sketch river profile is presented on Sheet D-8, Appendix D and shows the relationship of computed elevations and stationing to flood prone properties. With the potential for the loss of a few lives and appreciable economic losses the hazard classification is "significant."

SECTION 6 - EVALUATION OF STRUCTURAL STABILITY

6.1 VISUAL OBSERVATIONS:

The visual inspection did not disclose any immediate stability problems. However, the seepage through the stone masonry of the downstream face and the tree roots growing into the stone masonry could affect the future stability of the dam.

6.2 DESIGN AND CONSTRUCTION DATA:

No original design and construction data are available. Thus the evaluation of the stability is based solely on the visual inspection.

6.3 POST-CONSTRUCTION CHANGES:

No information is available about post-construction changes.

6.4 SEISMIC STABILITY:

Dobsonville Dam is located in Seismic Zone 1 and, in accordance with the recommended Phase I inspection guidelines, does not warrant seismic stability analysis.

SECTION 7 - ASSESSMENT, RECOMMENDATIONS AND REMEDIAL MEASURES

7.1 ASSESSMENT:

a. Condition. Based on a visual inspection, the dam appears to be in fair condition. However, there are some features which require correction or additional investigation as recommended in Sections 7.2 and 7.3.

b. Adequacy. The engineering information available was very limited and thus assessment of the condition of the dam was based primarily on the results of the visual inspection, past operational performance of the structure and sound engineering judgement.

c. Urgency. The recommendations and remedial measures presented in Sections 7.2 and 7.3 should be implemented by the owner within one year of receipt of this Phase I inspection report.

7.2 RECOMMENDATIONS:

The owner should retain a qualified registered engineer to accomplish the following:

a. Investigate the seepage occuring through the downstream face and design corrective measures, if needed.

b. Conduct more refined hydrologic and hydraulic analysis to determine the need for and methods of increasing the project discharge capacity.

c. Provide provisions for a low level outlet or other means of dewatering the pond during an emergency.

d. Inspect the spillway during "no flow" conditions.

The owner should carry out the recommendations made by the engineer.

7.3 REMEDIAL MEASURES:

a. Operating and Maintenance Procedures. The owner should:

1. Remove trees growing adjacent to the dam at both abutments.

2. Institute a program of annual technical inspection of the dam and its appurtenances by a qualified registered engineer.

3) Establish a surveillance program for use during and immediately after heavy rainfall, and also a warning program to follow in case of emergency conditions.

7.4 ALTERNATIVES:

There are no practical alternatives to the recommendations contained in Sections 7.2 and 7.3.

APPENDIX A

INSPECTION CHECK LIST

INSPECTION CHECK LIST

PARTY ORGANIZATION

PROJECT Dobsonville Dam **DATE** November 7, 1979

TIME 1230

WEATHER 50° F - Overcast

W.S. ELEV. ____ **U.S.** ____ **DN.S.**

PARTY:

1. R. Smith, FGA, Project Manager
2. J. McBroom, FGA, Hydraulics/Hydrology
3. R. Murdock, GEI, Geotechnical
4. D. Shields, GEI, Geotechnical
5.

	PROJECT FEATURE	INSPECTED BY	REMARKS
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

PERIODIC INSPECTION CHECK LIST
NATIONAL DAM INSPECTION PROGRAM

DAM: Dobsonville Dam DATE: Nov. 7, 1979

AREA EVALUATED	CONDITIONS
DAM EMBANKMENT	
Crest Elevation	248.5 NGVD
Current Pool Elevation	247.0 NGVD
Maximum Impoundment to Date	Unknown.
Surface Cracks	N/A
Pavement Condition	N/A - full crest spillway
Movement or Settlement of Crest	None observed.
Lateral Movement	None observed.
Vertical Alignment	No misalignment observed.
Horizontal Alignment	No misalignment observed.
Condition at Abutment and at Concrete Structures	Trees at abutments with roots growing into stone masonry face.
Indications of Movement of Structural Items on Slopes	N/A.
Trespassing on Slopes	N/A.
Sloughing or Erosion of Slopes or Abutments	N/A.
Rock Slope Protection - Riprap Failures	N/A.
Unusual Movement or Cracking at or near Toes	N/A.
Unusual Embankment or Downstream Seepage	Seepage through stone masonry downstream face.
Piping or Boils	N/A - founded on bedrock.
Foundation Drainage Features	None observed.
Toe Drains	N/A.
Instrumentation System	None
Vegetation	N/A.

PERIODIC INSPECTION CHECK LIST
NATIONAL DAM INSPECTION PROGRAM

DAM: Dobsonville Dam DATE: Nov. 7, 1979

AREA EVALUATED	CONDITIONS
DIKE EMBANKMENT	
Crest Elevation	None.
Current Pool Elevation	
Maximum Impoundment to Date	
Surface Cracks	
Pavement Condition	
Movement or Settlement of Crest	
Lateral Movement	
Vertical Alignment	
Horizontal Alignment	
Condition at Abutment and at Concrete Structures	
Indications of Movement of Structural Items on Slopes	
Trespassing on Slopes	
Sloughing or Erosion of Slopes or Abutments	
Rock Slope Protection - Riprap Failures	
Unusual Movement or Cracking at or near Toes	
Unusual Embankment or Downstream Seepage	
Piping or Boils	
Foundation Drainage Features	
Toe Drains	
Instrumentation System	
Vegetation	

PERIODIC INSPECTION CHECK LIST
NATIONAL DAM INSPECTION PROGRAM

DAM: Dobsonville Dam DATE: Nov. 7, 1979

AREA EVALUATED	CONDITIONS
OUTLET WORKS - INTAKE CHANNEL AND INTAKE STRUCTURE	No known controlled outlet other than the abandoned outlet works associated with past mill operations at the site.
a. Approach Channel	
Slope Conditions	
Bottom Conditions	
Rock Slides or Falls	
Log Boom	
Debris	
Condition of Concrete Lining	
Drains or Weep Holes	
b. Intake Structure	
Condition of Concrete	
Stop Logs and Slots	

PERIODIC INSPECTION CHECK LIST
NATIONAL DAM INSPECTION PROGRAM

DAM: Dobsonville Dam **DATE:** Nov. 7, 1979

AREA EVALUATED	CONDITIONS
OUTLET WORKS - CONTROL TOWER	
a. Concrete and Structural	None.
General Condition	
Condition of Joints	
Spalling	
Visible Reinforcing	
Rusting or Staining of Concrete	
Any Seepage or Efflorescence	
Joint Alignment	
Unusual Seepage or Leaks in Gate Chamber	
Cracks	
Rusting or Corrosion of Steel	
b. Mechanical and Electrical	
Air Vents	
Float Wells	
Crane Hoist	
Elevator	
Hydraulic System	
Service Gates	
Emergency Gates	
Lightning Protection System	
Emergency Power System	
Wiring and Lighting System in Gate Chamber	

PERIODIC INSPECTION CHECK LIST
NATIONAL DAM INSPECTION PROGRAM

DAM: Dobsonville Dam **DATE:** Nov. 7, 1979

AREA EVALUATED	CONDITIONS
OUTLET WORKS - TRANSITION AND CONDUIT	
General Condition of Concrete	None.
Rust or Staining on Concrete	
Spalling	
Erosion or Cavitation	
Cracking	
Alignment of Monoliths	
Alignment of Joints	
Numbering of Monoliths	

PERIODIC INSPECTION CHECK LIST
NATIONAL DAM INSPECTION PROGRAM

DAM: Dobsonville Dam DATE: Nov. 7, 1979

AREA EVALUATED	CONDITIONS
OUTLET WORKS - OUTLET STRUCTURE AND OUTLET CHANNEL	Not applicable
General Condition of Concrete	
Rust or Staining	
Spalling	
Erosion or Cavitation	
Visible Reinforcing	
Any Seepage or Efflorescence	
Condition at Joints	
Drain Holes	
Channel	
Loose Rock or Trees Overhanging Channel	
Condition of Discharge Channel	

PERIODIC INSPECTION CHECK LIST
NATIONAL DAM INSPECTION PROGRAM

DAM: Dobsonville Dam DATE: Nov. 7, 1979

AREA EVALUATED	CONDITIONS
OUTLET WORKS - SPILLWAY WEIR, APPROACH AND DISCHARGE CHANNELS	
a. Approach Channel	
General Condition	Underwater.
Loose Rock Overhanging Channel	None.
Trees Overhanging Channel	None.
Floor of Approach Channel	Underwater.
b. Weir and Training Walls	
General Condition of Concrete	Training walls constructed of stone masonry in good condition.
Rust or Staining	None.
Spalling	None.
Any Visible Reinforcing	None.
Any Seepage or Efflorescence	None.
Drain Holes	N/A
c. Discharge Channel	
General Condition	Good
Loose Rock Overhanging Channel	Not significant
Trees Overhanging Channel	Not significant
Floor of Channel	Natural stream bed
Other Obstructions	None

PERIODIC INSPECTION CHECK LIST
NATIONAL DAM INSPECTION PROGRAM

DAM: Dobsonville Dam DATE: Nov. 7, 1979

AREA EVALUATED	CONDITIONS
OUTLET WORKS - SERVICE BRIDGE	
a. Superstructure	None
Bearings	
Anchor Bolts	
Bridge Seat	
Longitudinal Members	
Under Side of Deck	
Secondary Bracing	
Deck	
Drainage System	
Railings	
Expansion Joints	
Paint	
b. Abutment & Piers	
General Condition of Concrete	
Alignment of Abutment	
Approach to Bridge	
Condition of Seat and Backwall	

APPENDIX B

ENGINEERING DATA

CHECK LIST
ENGINEERING DATA
DESIGN, CONSTRUCTION, OPERATION
PHASE I

NAME OF DAM Dobsonville Dam

I.D. NO. CT 00210

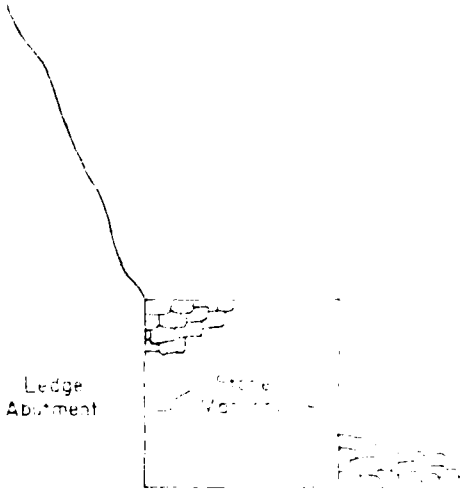
ITEM	REMARKS
AS-BUILT DRAWINGS	None Available
REGIONAL VICINITY MAP	Available from U.S.G.S.
CONSTRUCTION HISTORY	None
TYPICAL SECTIONS OF DAM	Field measurements
OUTLETS - Plan	Field measurements
- Details	Field measurements
- Constraints	Unknown
- Discharge Ratings	None available
RAINFALL/RESERVOIR RECORDS	Unavailable
DESIGN REPORTS	None
GEOLOGY REPORTS	None
DESIGN COMPUTATIONS	None
HYDROLOGY & HYDRAULICS	None
DAM STABILITY	None
SEEPAGE STUDIES	None
MATERIALS INVESTIGATIONS	None
BORINGS RECORDS	None
LABORATORY	None
FIELD	None

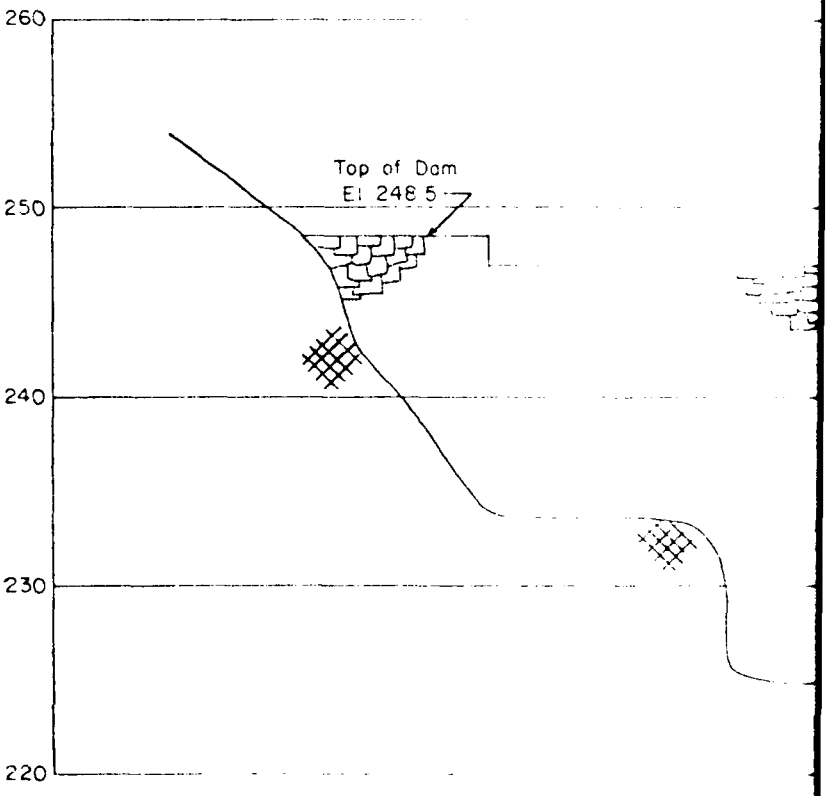
CHECK LIST
ENGINEERING DATA
DESIGN, CONSTRUCTION, OPERATION
PHASE I

NAME OF DAM Dobsonville Dam

I.D. NO. CT 00210

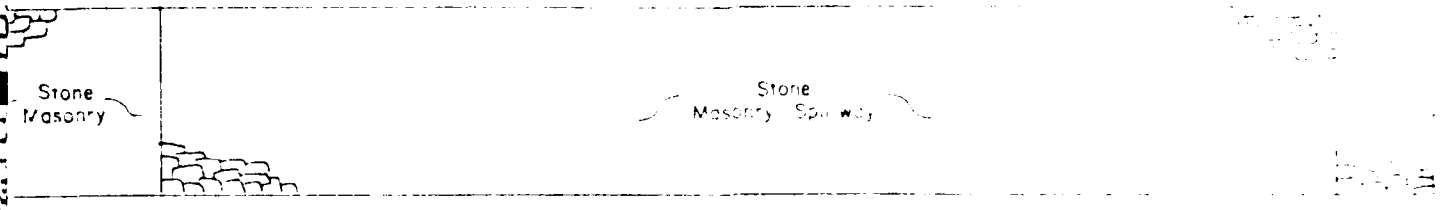
ITEM	REMARKS
POST-CONSTRUCTION SURVEYS OF DAM	None Available
BORROW SOURCES	Unknown
MONITORING SYSTEMS	Unknown
MODIFICATIONS	Unknown
HIGH POOL RECORDS	None
POST-CONSTRUCTION ENGINEERING STUDIES AND REPORTS	Report on Tankerhoosen Pond Dam - includes data on Dobsonville Dam (DEP Files)
PRIOR ACCIDENTS OR FAILURE OF DAM DESCRIPTION REPORTS	Unknown
MAINTENANCE OPERATION RECORDS	Unavailable
SPILLWAY PLAN	
SECTIONS	Field measurements
DETAILS	Field measurements
OPERATING EQUIPMENT PLANS & DETAILS	Not available


Ledge
Abutment

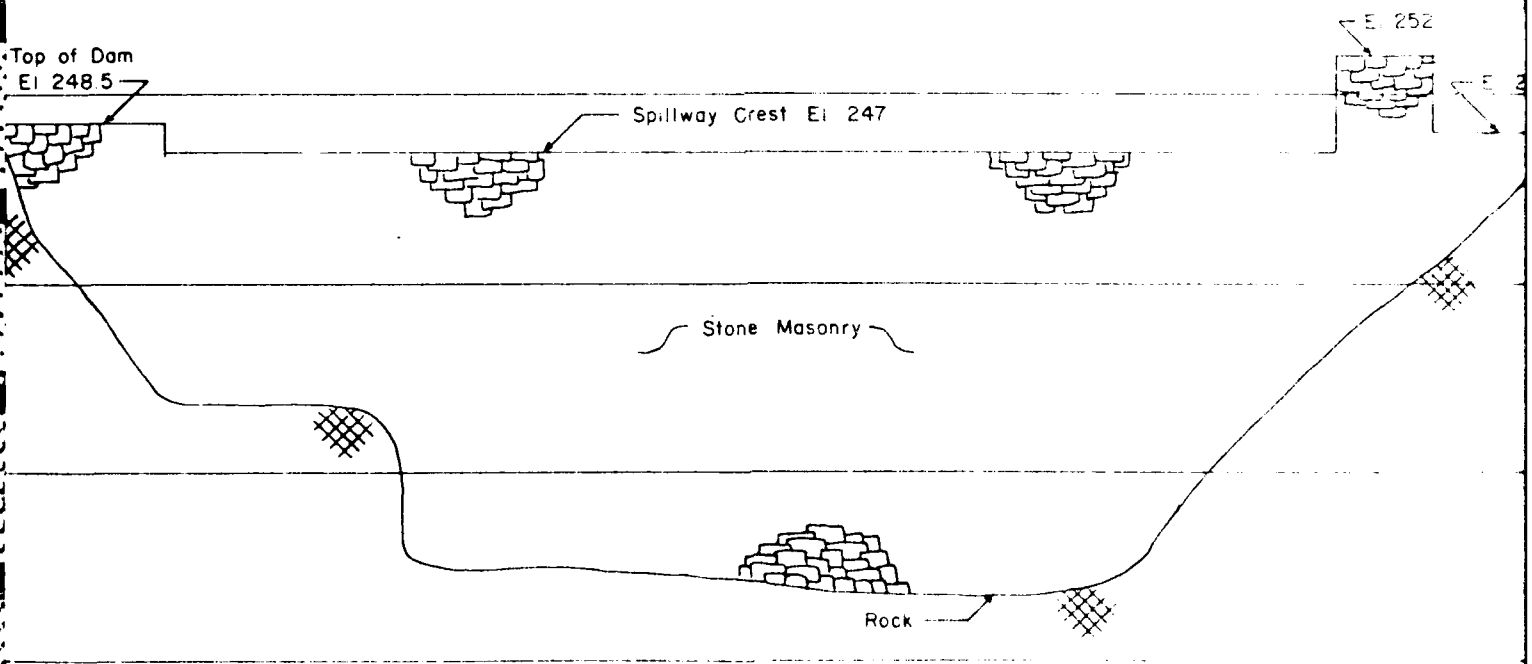

260
250
240
230
220
Top of Dam
El 248.5
Datum : NGVD

B-3

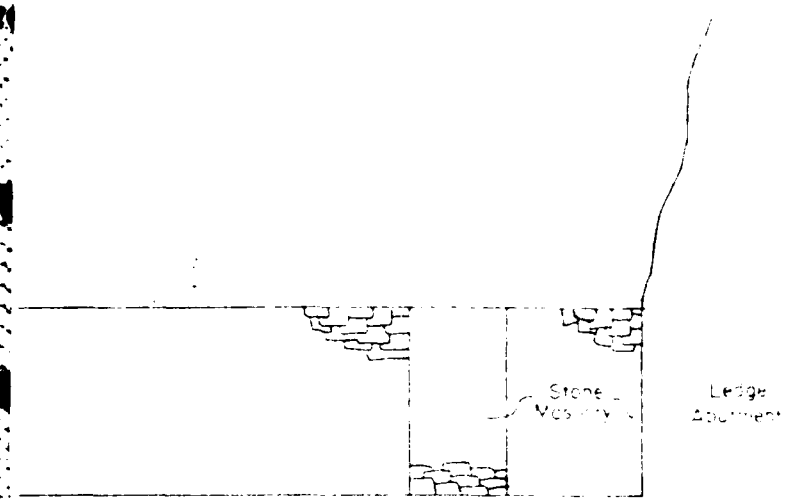
(1)

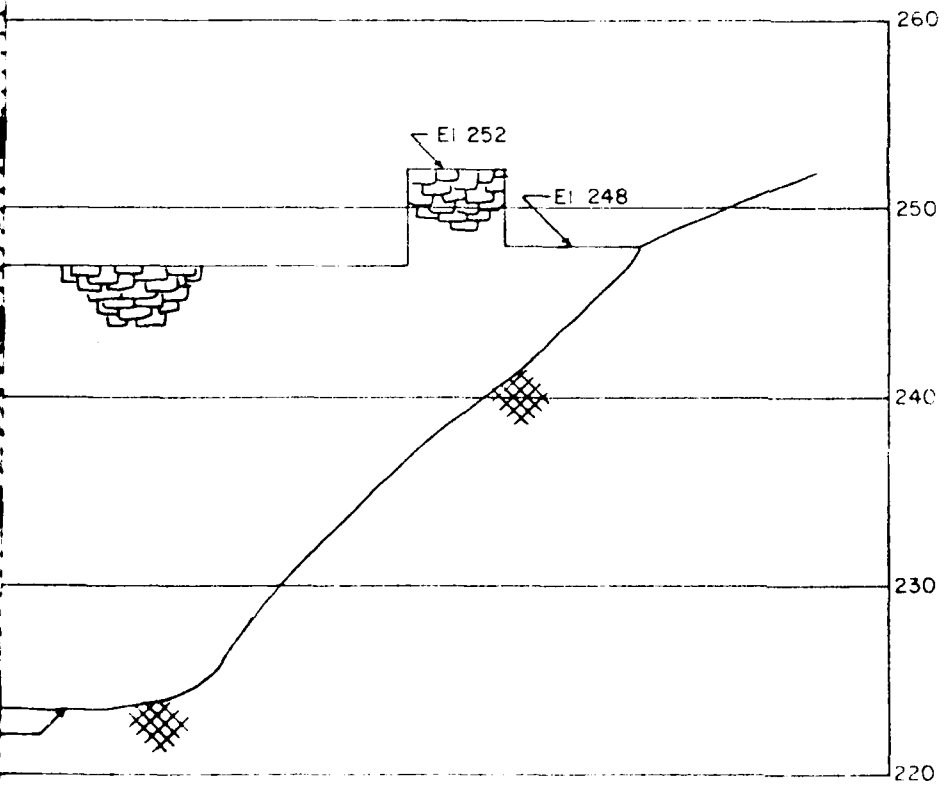


PLAN
NTS



PROFILE
NTS





DOBSONVILLE DAM

(3) B 3

REPORT

TO THE

STATE OF CONNECTICUT
DEPARTMENT OF ADMINISTRATIVE SERVICES
BUREAU OF PUBLIC WORKS

ON

TANKERHOOSEN POND DAM

HH&B Hayden, Harding & Buchanan, Inc.
Consulting Engineers

AUGUST 1979

c. Experience Data

The Tankerhoosen River is a tributory to the Hockanum River, which has a U.S.G.S. gage station (1-1925) in East Hartford. Generally, records are available from 1921 to the present. The gage station has a drainage area of 74.5 square miles (s.m.). Major floods occurred in March 1936, September 1938, and August 1955. The 1938 flood caused a maximum flow of 5160 cfs (69.262 cfs/sm) in the Hockanum River. This is approximately equivalent to a flow of 736 cfs at the Tankerhoosen Pond Dam (drainage area 10.5± s.m.). The depth of flow over the spillway could have been about 1.4 feet. No records of flow over the dam were found, however the dam apparently did not experience any damage due to flood flow. A section of the masonry near the left end of the spillway was apparently damaged when a tree, which was growing near the toe of the dam, fell over, causing some portion of the stone masonry to fall.

The apparent damage caused in 1938 was repaired at the Tankerhoosen Pond Dam. This is evidenced by the masonry repair work and the placement of concrete at the toe of the dam. A four inch concrete cap was placed on the spillway crest, possibly at the same time, as shown in photograph 4.

The Dobsonville Pond Dam shows no evidence of repairs. The spillway cap is stone masonry blocks tied together with steel clamps. See photograph 8 for a view of the spillway crest. No records of flood flow were located. The March 1938 storm could have caused an approximate flow of 771 cfs at the dam (drainage area of 11.13 s.m.). The depth of flow over the spillway could have been about 2.25 feet.

Spillway Adequacy

Three techniques were used to determine peak runoff inflow at each of the three dam locations. The results for the 100 year storm are as follows:

	Location		
Method	Tankerhoosen	Dobsonville	Talcottville
	cfs	cfs	cfs
SCS	5000	4950	4950
Weiss Formulas	1892	1865	2100
NEHL	3200	3600	3700

It is obvious that these methods did not produce results which are in agreement. The SCS method tends to yield conservative results based upon rainfall and soils characteristics. The Weiss Formulas yield results which are based upon formulas developed by statistical analysis of stream flow data for the State of Connecticut. The NEHL method yields results which are based upon rainfall and soils characteristics of a certain region. This method was included to verify the results of the first two methods.

The maximum spillway capacities at each of the dams are as follows:

Tankerhoosen	1,624 cfs
Dobsonville	2,900 cfs
Talcottville	3,087 cfs.

The differences in spillway capacity are obvious. All three spillways are not adequate for peak runoff as determined in the SCS or NEHL method. The spillways at Dobsonville and Talcottville

would be adequate for the peak runoff determined by the Weiss Formula but the Tankerhoosen spillway is not adequate.

Table 4 presents all the pertenent hydraulic information for all three dams developed in this study.

Additional Runoff Considerations

In addition to the 100 year storm peak runoff (Q_{100}) the 200 year (Q_{200}) storm peak runoff and U.S. Army Corps of Engineers Peak Discharge were determined for the three sites. Using the Weiss Formula and Corps of Engineers criteria, these discharges were determined as follows:

Weiss Formula for Q_{200}

Tankerhoosen Pond Dam 2,462 cfs

Dobsonville Pond Dam 2,415 cfs

Talcottville Pond Dam 2,721 cfs

Corps of Engineers

Corps guidelines for a small size dam with low hazard potential allow the use of a 100 year test flood for the analysis of spillway adequacy. Peak runoffs determined with this method are conservative. The inflow at each site would be as follows:

Tankerhoosen Pond Dam 5,119 cfs

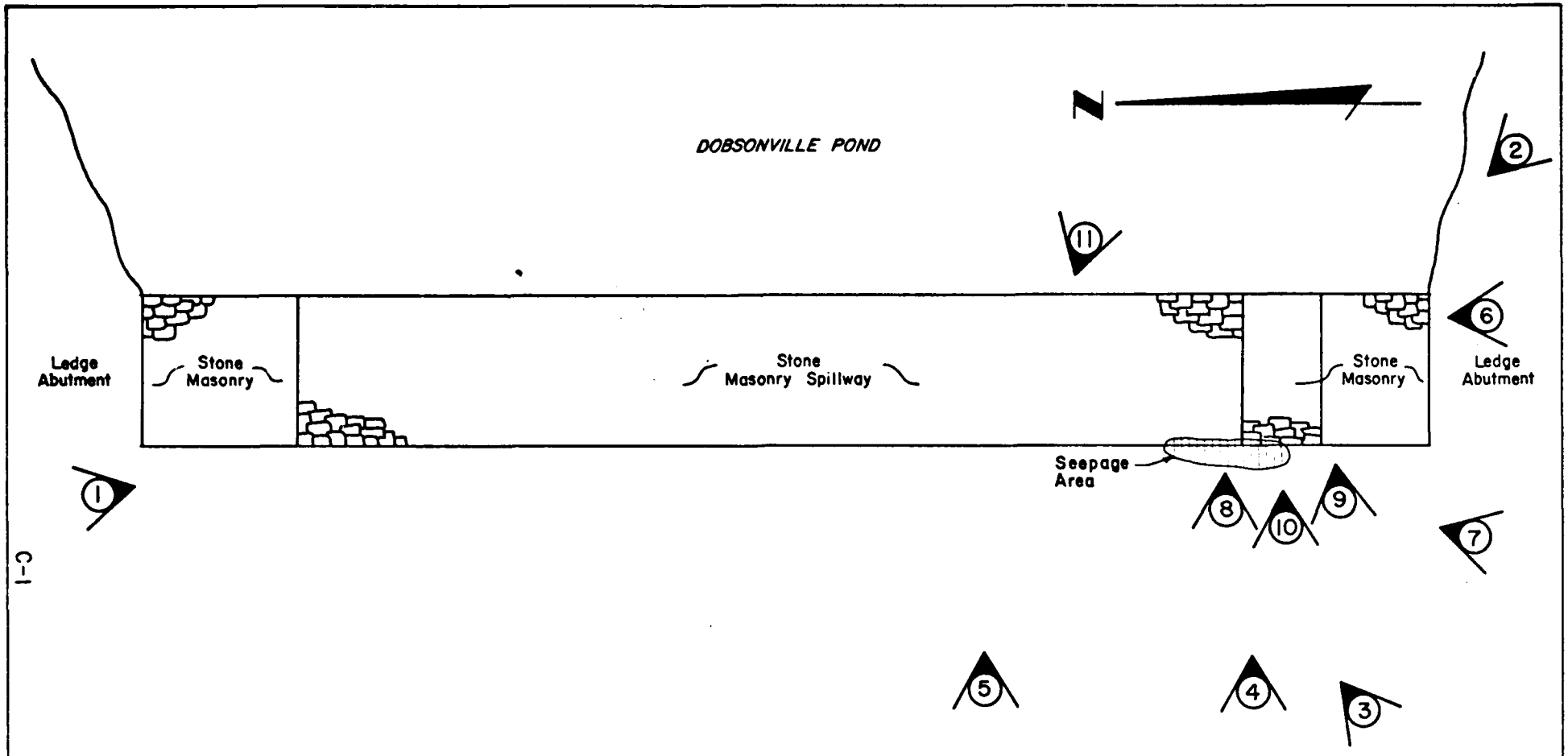
Dobsonville Pond Dam 5,384 cfs

Talcottville Pond Dam 6,033 cfs

From these inflows, it is obvious that only the Dobsonville and Talcottville spillways are adequate for the Weiss Formula Q_{200} peak flows. None of the spillways are adequate for the Corps Q_{100} test

APPENDIX C

PHOTOGRAPHS



C-1

LEGEND

5 Number refers to caption. Arrow indicates direction of photograph.

DOBSONVILLE DAM

PHOTO LOCATION MAP

PHOTO #1: Crest of dam from right abutment

PHOTO #2: Top of dam, looking downstream

PHOTO #3: Right abutment

PHOTO #4: Left abutment

PHOTO #5: Downstream face of dam

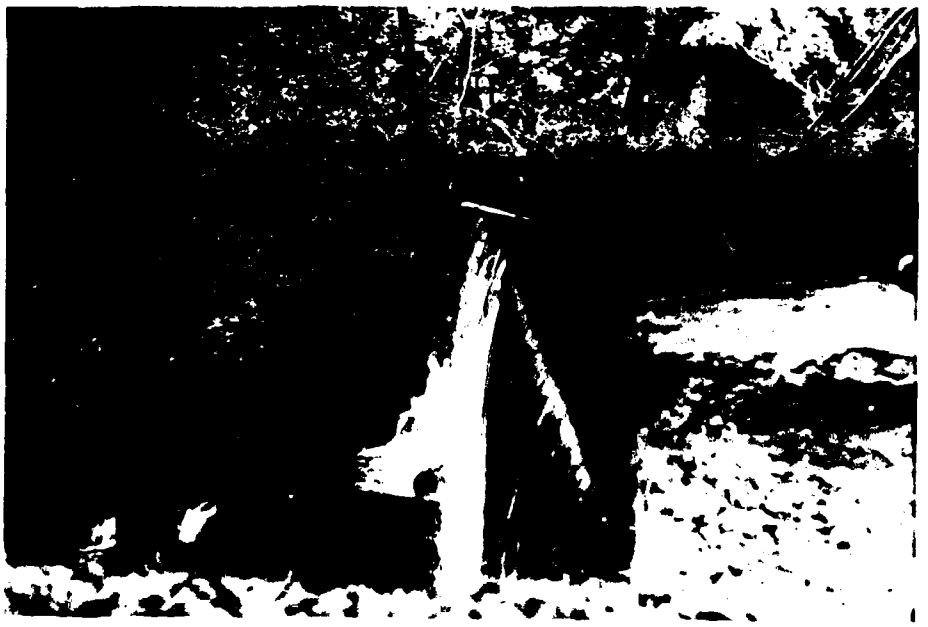


PHOTO #6: Crest of dam, looking toward right abutment

PHOTO #7: Downstream face of dam, from left abutment

PHOTO #8: Seepage through unmortared stone masonry of downstream face. (Left side of dam).

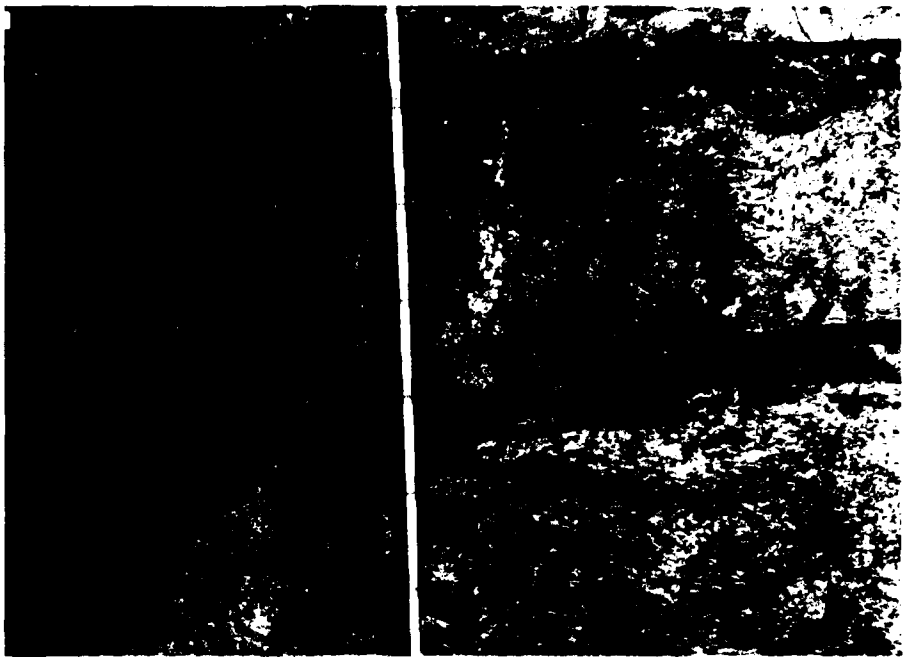


PHOTO #9: Close up of stone masonry construction of downstream face, near left abutment.

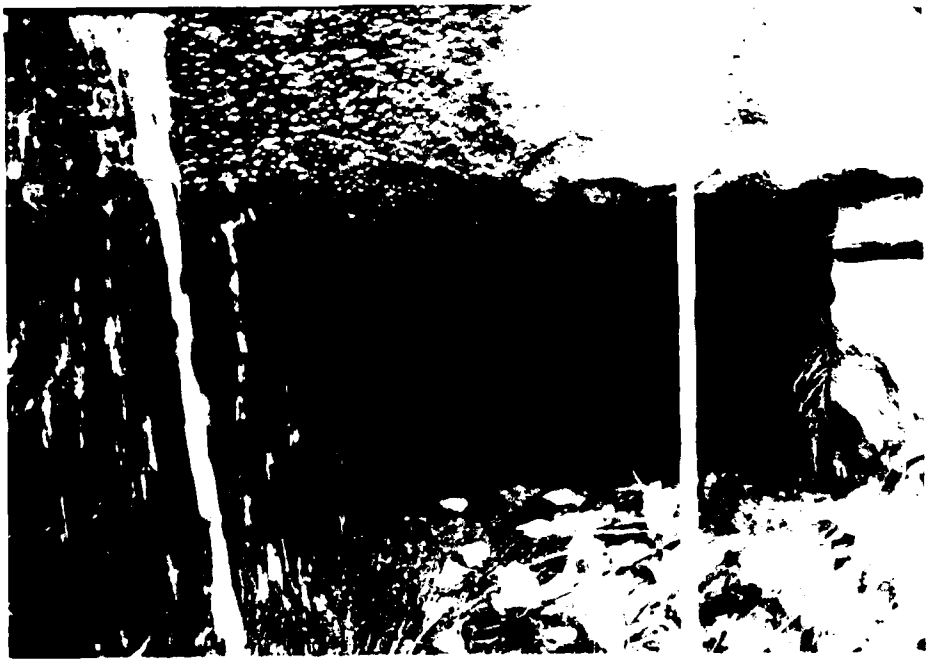


PHOTO #10: Downstream face at left abutment. Note sluiceway outlet lower portion of photo.

PHOTO #11: Downstream Channel

PHOTO #12: Reservoir Area

APPENDIX D

HYDROLOGIC AND HYDRAULIC COMPUTATIONS

FLAHERTY-GIAVARA ASSOCIATES
ENVIRONMENTAL DESIGN CONSULTANTS
ONE COLUMBUS PLAZA NEW HAVEN, CONN 06510/203/789-1260

DETERMINATION OF SPILLWAY TEST FLOOD*

A. SIZE CLASSIFICATION

Storage Volume (Ac.-Ft.) 125

Height of Dam (Ft.) 26

THIS IS THE MORE CONSERVATIVE OF TWO REPORTED VALUES

Size Classification SMALL

B. HAZARD POTENTIAL CLASSIFICATION

Category	Loss of Life	Economic Loss
Low	None expected	Minimal
(Significant)	(Few)	Appreciable
High	More than few	Excessive

Hazard Classification SIGNIFICANT

C. HYDROLOGIC EVALUATION GUIDELINES

Hazard	Size	Spillway Test Flood
Low	Small	50 to 100-Year Frequency
	Intermediate	100-Year Frequency to 1/2 PMF
	Large	1/2 PMF to PMF
(Significant)	(Small)	100-Year Frequency to 1/2 PMF
	Intermediate	1/2 PMF to PMF
	Large	PMF
High	Small	1/2 PMF to PMF
	Intermediate	PMF
	Large	PMF

Spillway Test Flood 100-YR FREQUENCY

*Based upon "Recommended Guidelines for Safety Inspection of Dams" Department of the Army, Office of the Chief of Engineers, November 1976.

PROJECT 79010
PASONVILLE PARK
ROCKVILLE CT

FLAHERTY-GIAVARA ASSOCIATES
ENVIRONMENTAL DESIGN CONSULTANTS
ONE COLUMBUS PLAZA NEW HAVEN, CONN 06510/203/789-1260

SHEET NO. 2 OF 7
BY AC DATE 4-1-80
CHK'D. BY DKS DATE 4-23-80

DETERMINATION OF THE

MAXIMUM PROBABLE FLOOD (MPF)

A. Drainage Area in Square Miles 10.72

B. Watershed Characteristic: Flat & Coastal

(Rolling)

Moutainous

C. M.P.F. in CFS/Square Mile,* 1650 CFS

M.P.F. = (CFS/Square Mile) x (Area in Square Miles)

1650 x 10.72 = 17,688 CFS

(17,688 CFS) (1/4 PMF) = 4422 CFS

100 YR FREQUENCY ≈ 1/4 PMF

*Based upon the figure "Maximum Probable Flood Peak Flow Rates" U.S. Army Corps of Engineers, December 1977.

FLAHERTY-GIAVARA ASSOCIATES
ENVIRONMENTAL DESIGN CONSULTANTS
ONE COLUMBUS PLAZA, NEW HAVEN, CONN 06510/203/789-1260

THE PMP (RAINFALL) IS 24 INCHES FOR A 6 HOUR STORM. USING A 20% FACTOR FOR IMPERFECT FIT, THE EFFECTIVE RAIN FALL IS 19.2 INCHES. (SEE FIGURE 15, PAGE 48, DESIGN OF SMALL DAMS)

RUNOFF

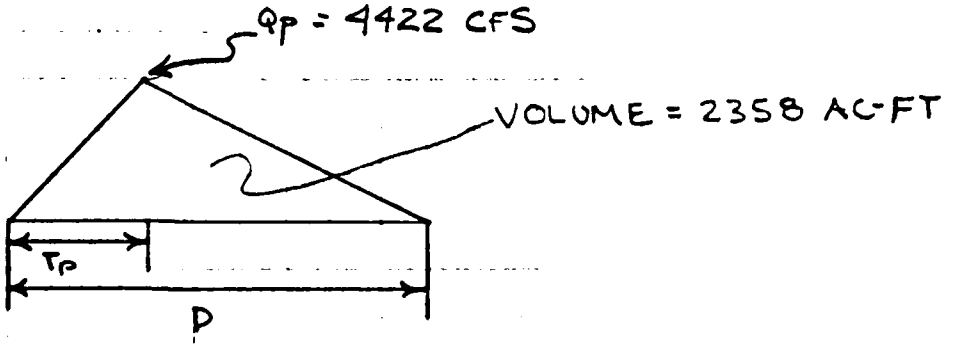
BASED ON AN ASSUMED CN VALUE OF 80 (FOR GLACIAL TILL SOILS), RUNOFF FOR THE PMF IS 16.5 INCHES (FIGURE A-A, PAGE 542, DESIGN OF SMALL DAMS).

TEST FLOOD RUNOFF EQUALS 25% OF PMF RUNOFF
VOLUME OF RUNOFF =

$$(.25)\left(\frac{16.5''}{12''/FT}\right)\left(10.72\,MI^2\right)\left(640\,AC/MI^2\right) = 2358\ AC\text{-}FT$$

HYDROGRAPH

A TRIANGULAR HYDROGRAPH IS TO BE USED FOR THE ROUTING OF THE TEST FLOOD THROUGH THE RESERVOIR. PEAK FLOW EQUALS 4422 CFS, THE DURATION OF RUNOFF IS SET SO AS TO CONTAIN VOLUME OF RUNOFF. THE RECEEDING LIMB EQUALS TWICE THE RISING LIMB.



$$VOL = \tfrac{1}{2} Q_P D$$

$$2358 = \tfrac{1}{2} (4422) D$$

$$D = \frac{(2358\ AC/FT)(43560\ FT^2/AC)}{(.5)(4422)(60^2\ SEC/HR)} = 12.9\ \text{HOUR DURATION}$$

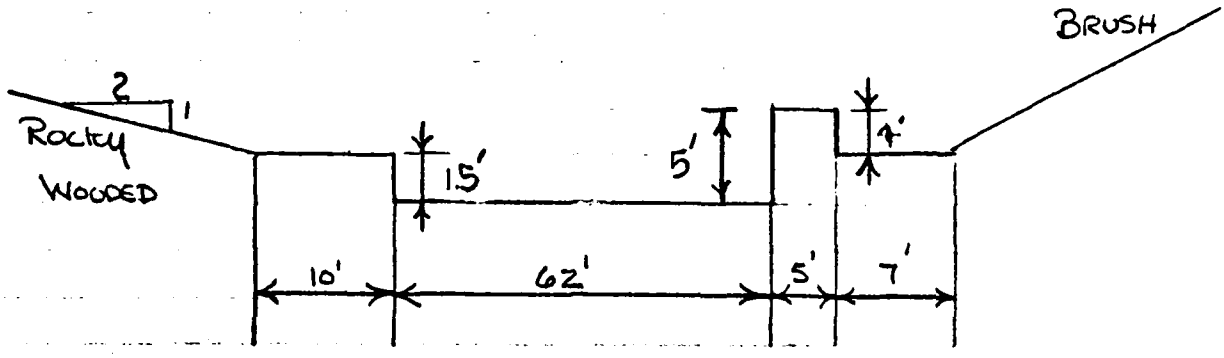
$D = 12.9$ HOURS $T_P = 4.3$ HOURS

$Q_P = 4422$ CFS

TIME (HOURS)	INFLOW (CFS)
0	0
1	1028
2	2057
3	3085
4	4113
4.3	4422
5	4062
6	3548
7	3034
8	2519
9	2005
10	1491
11	977
12	463
12.9	0

FLAHERTY-GIAVARA ASSOCIATES
ENVIRONMENTAL DESIGN CONSULTANTS
ONE COLUMBUS PLAZA NEW HAVEN CONN 06510/203/789-1260

SPILLWAY SECTION N.T.S.



SEGMENT	ITEM	C	LENGTH	ELEV	
1	ROCK-BLOCK	2.5	10'	248.5	
2	ROCK SPILLWAY	3.0	62'	247	USGS
3	ROCK-BLOCK	2.5	5'	252	
4	" "	2.5	7'	248	

IE = 247 IY = 0

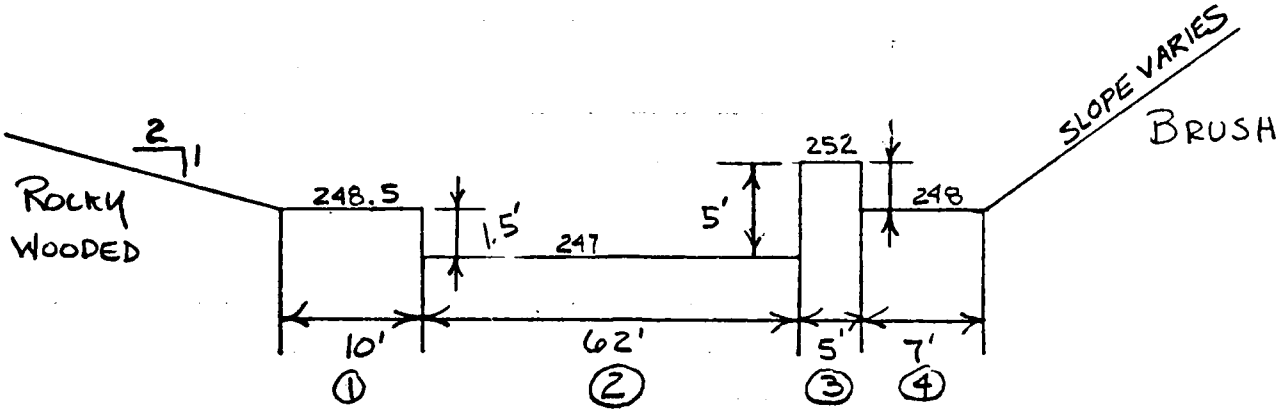
E = 247 A = 5.5
E = 260 A = 13.8

PROJECT 79010
OBSONVILLE POND
ROCKVILLE CONN

FLAHERTY-GIAVARA ASSOCIATES
ENVIRONMENTAL DESIGN CONSULTANTS
ONE COLUMBUS PLAZA NEW HAVEN CONN 06510/203/789-1260

SHEET NO. 6 OF 7
BY RAC DATE 4-10-
CHK'D. BY JFM DATE 6/4/80

STAGE DISCHARGE DATA NTS



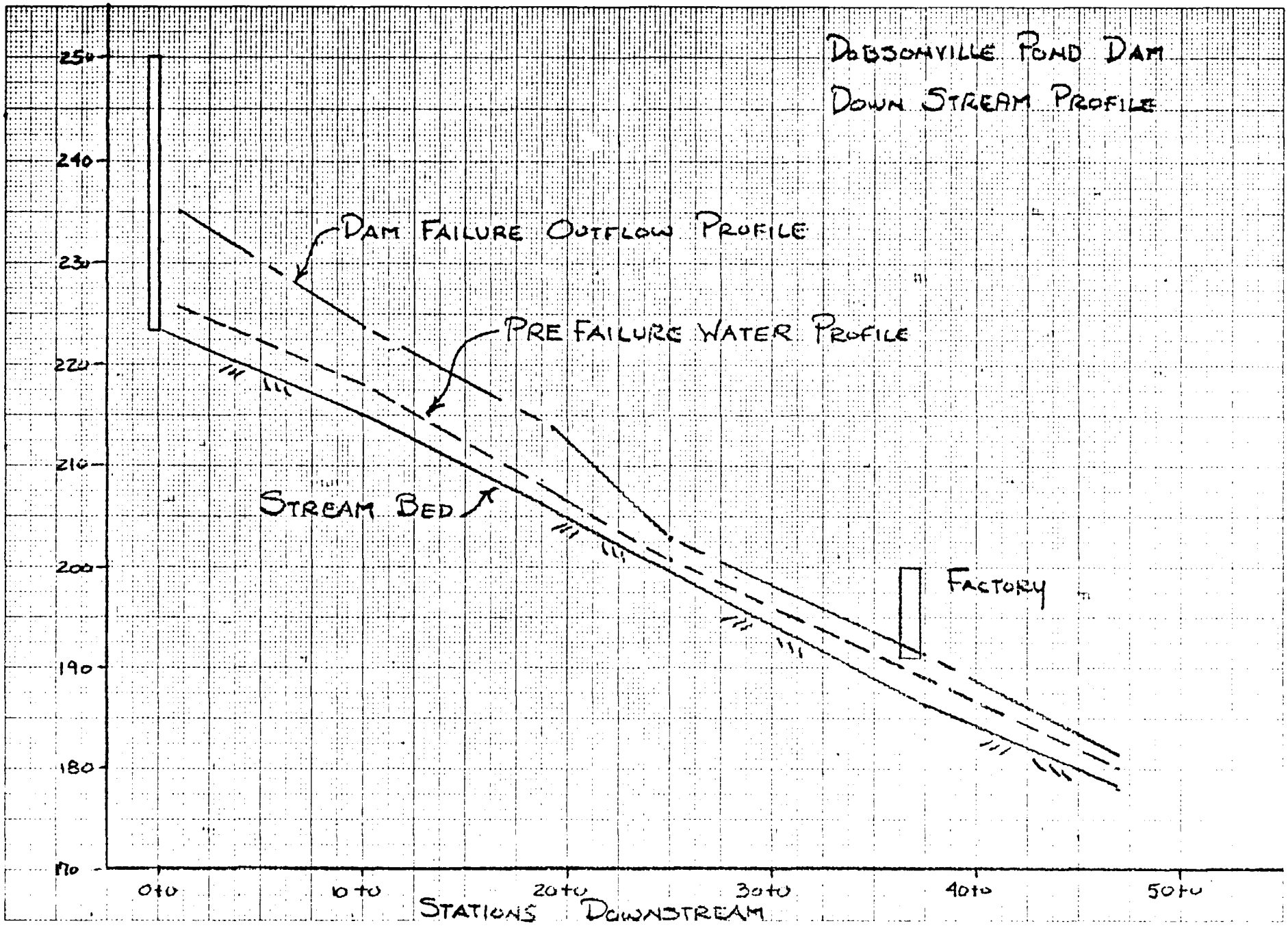
ELEVATION	247	248	249	250	251	252	253	254
$Q_1=(2.5)(10)H^{1.5}$		—	9	46	99	164	239	322
$Q_2=(3.0)(62)H^{1.5}$	—	186	526	966	1488	2080	2734	3445
$Q_3=(2.5)(5)H^{1.5}$			—	—	—	—	13	35
$Q_4=(2.5)(7)H^{1.5}$		—	18	49	91	140	196	257
TOTAL CAPACITY	0	186	553	1061	1731	2384	3182	4059

PROJECT 7990 10
JACKSONVILLE POND
JACKSONVILLE CONN

FLAHERTY-GIAVARA ASSOCIATES
ENVIRONMENTAL DESIGN CONSULTANTS
ONE COLUMBUS PLAZA NEW HAVEN CONN 06510/203/789-1260

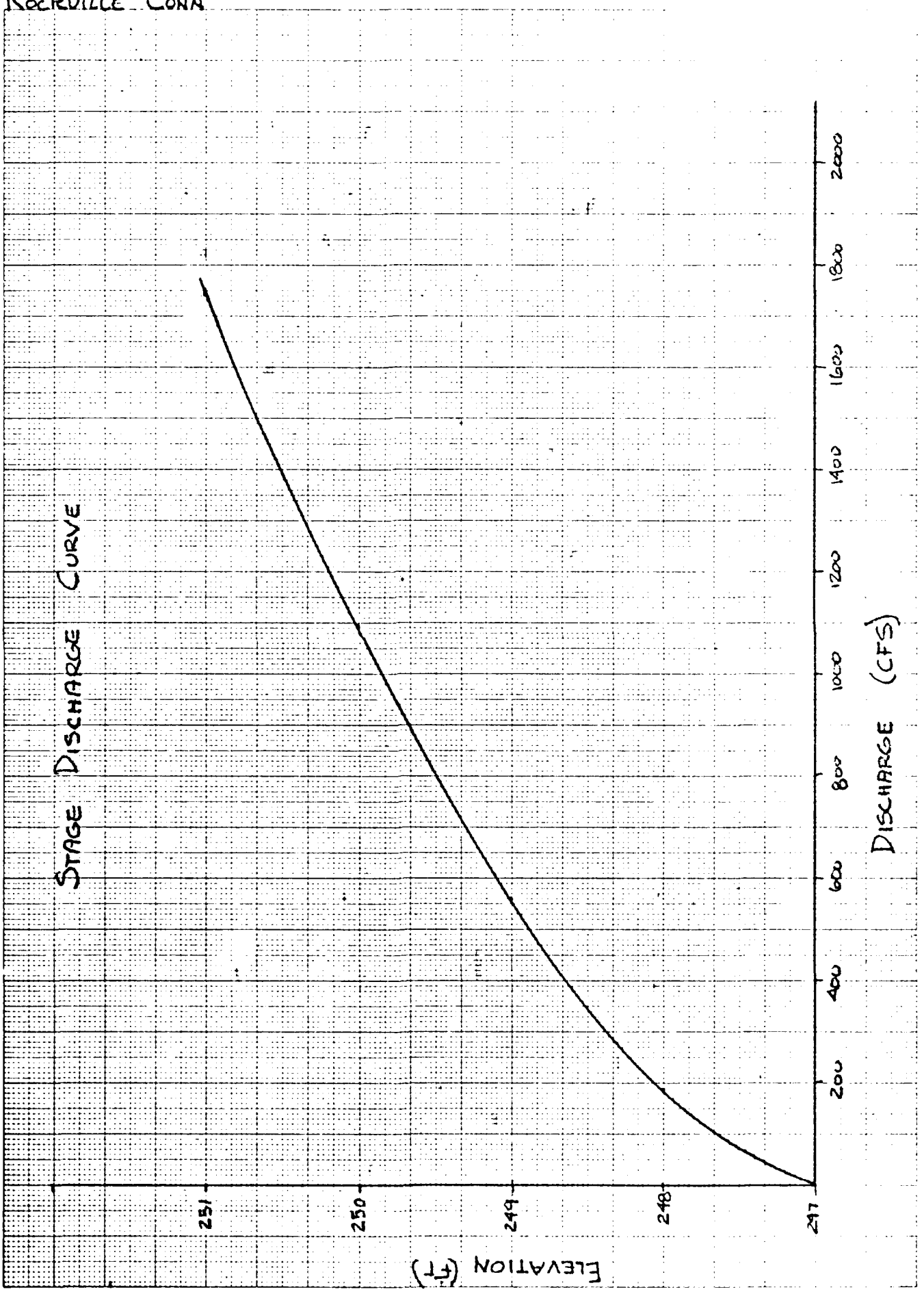
SHEET NO. 7 OF 7
BY RAC DATE 4-18-8
CHK'D. BY JKS DATE 4-23-8

HSE ELEV (FACTORY)	BASE FLOW	FLOODWAVE	BASE FLOW FLOODING	FLOODWAVE FLOODING
191	189	192	—	1'
(GARAGE)				
187	186	188	—	1'


DODSONVILLE POND DAM
DOWN STREAM PROFILE
DAM FAILURE OUTFLOW PROFILE
PRE FAILURE WATER PROFILE
STREAM BED
FACTORY
250
240
230
220
210
200
190
180
No
0 to
10 to
20 to
30 to
40 to
50 to
STATIONS DOWNSTREAM

7990 10
DOBSONVILLE POND DAM
ROCKVILLE CONN

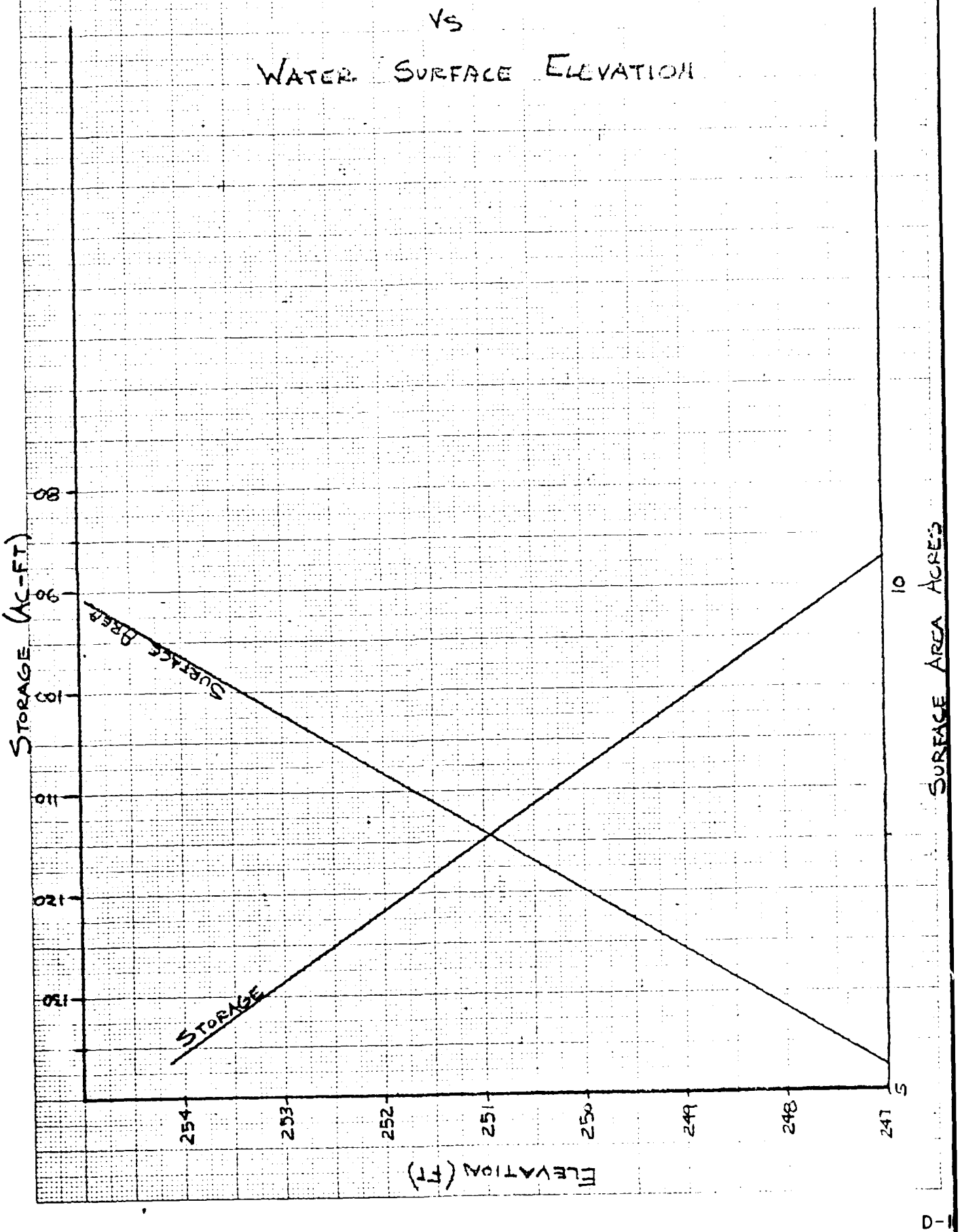
RAC 4-18-80
DKS 4-23-80



RAC 4-18-80
DKS 4-23-80

DOBSONVILLE POND DAM
ROCKVILLE CONN

RESERVOIR STORAGE & SURFACE AREA VS WATER SURFACE ELEVATION



DOBSONVILLE 100 YR STM FLOOD ROUTING JGM 6/4/80

INPUT DATA: UNSUBMERGED WEIR

SEGMENT 1	DISCHARGE COEFFICIENT =	2.5	LENGTH OF WEIR =	10	ELEVATION OF WEIR =	248.5
SEGMENT 2	DISCHARGE COEFFICIENT =	3	LENGTH OF WEIR =	62	ELEVATION OF WEIR =	247
SEGMENT 3	DISCHARGE COEFFICIENT =	2.5	LENGTH OF WEIR =	5	ELEVATION OF WEIR =	252
SEGMENT 4	DISCHARGE COEFFICIENT =	2.5	LENGTH OF WEIR =	7	ELEVATION OF WEIR =	248

IE=247.0 IV= 0.0 E=247.0 A= 5.50 E=260.0 A= 13.70

HOUR	INFLOW	MASS INFLOW	WATER EL.	TAIL WATER	OUTFLOW	MASS OUTFLOW	STORAGE(R)	STORAGE(A)
0.00	0CFS	0.00AC-F	247.00FT	.00FT	0CFS	0.00AC-F	0.00AC-F	0.00AC-F
1.00	1,028CFS	42.47AC-F	249.28FT	0.00FT	684CFS	28.27AC-F	14.19AC-F	14.20AC-F
2.00	2,057CFS	169.95AC-F	251.46FT	0.00FT	1,997CFS	139.09AC-F	30.86AC-F	30.86AC-F
3.00	3,085CFS	382.43AC-F	252.65FT	0.00FT	2,895CFS	341.25AC-F	41.18AC-F	41.18AC-F
4.00	4,113CFS	679.87AC-F	253.94FT	0.00FT	4,007CFS	626.48AC-F	53.38AC-F	53.38AC-F
4.30	4,422CFS	785.68AC-F	254.24FT	0.00FT	4,285CFS	729.29AC-F	56.38AC-F	56.38AC-F
5.00	4,062CFS	1,031.08AC-F	254.17FT	0.00FT	4,222CFS	975.37AC-F	55.70AC-F	55.70AC-F
6.00	3,548CFS	1,345.54AC-F	253.44FT	0.00FT	3,561CFS	1,297.01AC-F	48.53AC-F	48.53AC-F
7.00	3,034CFS	1,617.53AC-F	252.94FT	0.00FT	3,134CFS	1,573.68AC-F	43.84AC-F	43.84AC-F
8.00	2,519CFS	1,846.99AC-F	252.24FT	0.00FT	2,571CFS	1,809.45AC-F	37.53AC-F	37.53AC-F
9.00	2,005CFS	2,033.93AC-F	251.59FT	0.00FT	2,088CFS	2,001.99AC-F	31.93AC-F	31.93AC-F
10.00	1,491CFS	2,178.40AC-F	250.82FT	0.00FT	1,560CFS	2,152.77AC-F	25.62AC-F	25.62AC-F
11.00	977CFS	2,280.38AC-F	249.99FT	0.00FT	1,059CFS	2,261.07AC-F	19.31AC-F	19.31AC-F
12.00	463CFS	2,339.88AC-F	248.99FT	0.00FT	551CFS	2,327.64AC-F	12.24AC-F	12.24AC-F
12.90	0CFS	2,357.10AC-F	247.76FT	0.00FT	123CFS	2,352.73AC-F	4.36AC-F	4.37AC-F

[illegible] DAM 799010 RAC JULY 10, 1980

[illegible] FLOOD WAVE ROUTINGS

APPROXIMATE FLOOD WAVE ROUTING BASED UPON U.S. ARMY CORPS OF ENGINEERS' "RULE OF THUMB GUIDANCE FOR ESTIMATING DOWNSTREAM DAM FAILURE HYDROGRAPHS" DATED APRIL, 1978.

INITIAL STATION = 0.00
INITIAL BASE FLOW = 245 CFS
INITIAL WAVE HEIGHT = 26.0 FT
ASSUMED BREACH WIDTH = 33.0 FT
INITIAL RESERVOIR STORAGE = 125 ACRE-FT
COMPUTED FLOOD WAVE PEAK FLOW = 7,351 CFS
TOTAL FLOOD WAVE PEAK FLOW = 7,596CFS

STATION 0+00

OFFSET	ELEV.	OFFSET	ELEV.	OFFSET	ELEV.
		N = 0.080			
-330.0 FT	290.0 FT	-240.0 FT	280.0 FT	-70.0 FT	260.0 FT
-30.0 FT	240.0 FT	-10.0 FT	223.0 FT		
		N = 0.040			
-10.0 FT	223.0 FT	-5.0 FT	221.0 FT	5.0 FT	221.0 FT
10.0 FT	223.0 FT				
		N = 0.080			
10.0 FT	223.0 FT	100.0 FT	250.0 FT	230.0 FT	270.0 FT
350.0 FT	320.0 FT	470.0 FT	300.0 FT	1060.0 FT	310.0 FT

AREA	WETTED PERIMETER	N	VELOCITY	FLOW
54.7 SF	14.8 FT	0.080	4.5 FPS	240CFS
[illegible].7 SF	20.7 FT	0.040	21.5 FPS	5,800CFS
244.5 SF	41.5 FT	0.080	6.2 FPS	1,487CFS

INPUT	DEPTH	W. SURFACE	AREA	VELOCITY	FLOW	SLOPE
221.0 FT	13.9 FT	234.9 FT	559 SF	13.4 FPS	7,528 CFS	0.0111

BASE FLOW = 245 CFS BASE STAGE = 223.5 FT.

STATION 10 +00

OFFSET	ELEV.	OFFSET	ELEV.	OFFSET	ELEV.
		N = 0.080			
-380.0 FT	250.0 FT	-290.0 FT	220.0 FT	-90.0 FT	220.0 FT
-10.0 FT	217.0 FT				
		N = 0.040			
-10.0 FT	217.0 FT	-5.0 FT	215.0 FT	5.0 FT	215.0 FT
10.0 FT	217.0 FT				
		N = 0.080			
10.0 FT	217.0 FT	25.0 FT	220.0 FT	180.0 FT	250.0 FT
390.0 FT	300.0 FT				

AREA	WETTED PERIMETER	N	VELOCITY	FLOW
1,046.4 SF	290.3 FT	0.080	3.5 FPS	3,683CFS
155.0 SF	20.7 FT	0.040	11.4 FPS	1,773CFS
98.5 SF	32.4 FT	0.080	3.1 FPS	310CFS

INVERT	DEPTH	W. SURFACE	AREA	VELOCITY	FLOW	SLOPE
215.0 FT	8.2 FT	223.2 FT	1,300 SF	4.4 FPS	5,767 CFS	0.0065

BASE FLOW = 245 CFS BASE STAGE = 217.8 FT.

STATION 1234.00

OFFSET	ELEV.	OFFSET	ELEV.	OFFSET	ELEV.
		N = 0.080			
-410.0 FT	290.0 FT	-280.0 FT	250.0 FT	-110.0 FT	210.0 FT
-10.0 FT	208.0 FT				
		N = 0.040			
-10.0 FT	208.0 FT	-5.0 FT	206.0 FT	5.0 FT	206.0 FT
10.0 FT	208.0 FT				
		N = 0.080			
10.0 FT	208.0 FT	25.0 FT	210.0 FT	100.0 FT	250.0 FT
320.0 FT	300.0 FT				

AREA	WETTED PERIMETER	N	VELOCITY	FLOW
516.3 SF	116.8 FT	0.080	5.0 FPS	2,582CFS
146.9 SF	20.7 FT	0.040	13.6 FPS	2,012CFS
97.7 SF	28.6 FT	0.080	4.2 FPS	410CFS

INVERT	DEPTH	W. SURFACE	AREA	VELOCITY	FLOW	SLOPE
206.0 FT	7.8 FT	213.8 FT	760 SF	6.5 FPS	5,006 CFS	0.0100

BASE FLOW = 245 CFS BASE STAGE = 208.5 FT.

STATION 25 +00

OFFSET	ELEV.	OFFSET	ELEV.	OFFSET	ELEV.
		N = 0.080			
-500.0 FT	250.0 FT	-350.0 FT	210.0 FT	150.0 FT	203.0 FT
		N = 0.040			
-150.0 FT	203.0 FT	-145.0 FT	200.0 FT	145.0 FT	200.0 FT

STATION 25 +00

OFFSET	ELEV.	OFFSET	ELEV.	OFFSET	ELEV.
		N = 0.080			
-500.0 FT	250.0 FT	-350.0 FT	210.0 FT	-150.0 FT	203.0 FT
		N = 0.040			
-150.0 FT	203.0 FT	-145.0 FT	200.0 FT	145.0 FT	200.0 FT
150.0 FT	203.0 FT				
		N = 0.080			
150.0 FT	203.0 FT	350.0 FT	250.0 FT		

AREA	WETTED PERIMETER	N	VELOCITY	FLOW
703.0 SF	299.2 FT	0.040	6.5 FPS	4,615CFS

INVERT	DEPTH	W. SURFACE	AREA	VELOCITY	FLOW	SLOPE
200.0 FT	2.3 FT	202.3 FT	703 SF	6.5 FPS	4,615 CFS	0.0100

BASE FLOW = 245 CFS BASE STAGE = 200.4 FT.

STATION 37 +40

OFFSET	ELEV.	OFFSET	ELEV.	OFFSET	ELEV.
		N = 0.050			
-250.0 FT	190.0 FT	-50.0 FT	190.0 FT	-10.0 FT	189.0 FT
		N = 0.040			
-10.0 FT	189.0 FT	-5.0 FT	187.0 FT	5.0 FT	187.0 FT
10.0 FT	189.0 FT				
		N = 0.050			
10.0 FT	189.0 FT	50.0 FT	190.0 FT	150.0 FT	200.0 FT

AREA	WETTED PERIMETER	N	VELOCITY	FLOW
483.5 SF	240.0 FT	0.050	4.9 FPS	2,404CFS
88.6 SF	20.7 FT	0.040	10.2 FPS	908CFS
115.9 SF	59.4 FT	0.050	4.8 FPS	564CFS

INVERT	DEPTH	W. SURFACE	AREA	VELOCITY	FLOW	SLOPE
187.0 FT	4.9 FT	191.9 FT	688 SF	5.6 FPS	3,877 CFS	0.0110

BASE FLOW = 245 CFS BASE STAGE = 189.4 FT.

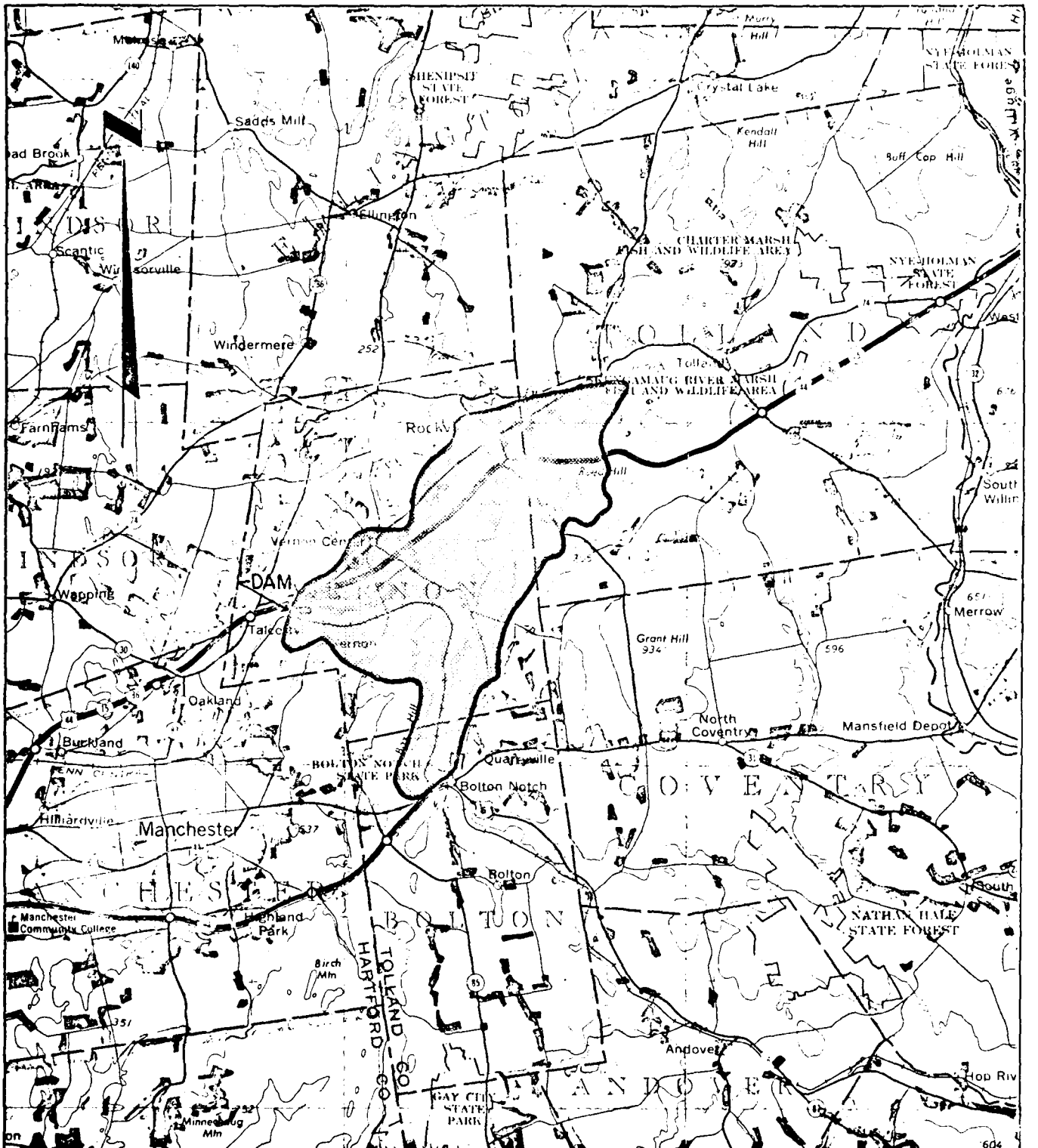
STATION AT 0.0

OFFSET	ELEV.	OFFSET	ELEV.	OFFSET	ELEV.
		N = 0.050			
-1100.0 FT	190.0 FT	-75.0 FT	180.0 FT	-10.0 FT	180.0 FT
		N = 0.040			
-10.0 FT	180.0 FT	-5.0 FT	178.0 FT	5.0 FT	178.0 FT
10.0 FT	180.0 FT				
		N = 0.050			
10.0 FT	180.0 FT	1100.0 FT	180.0 FT	1250.0 FT	190.0 FT

AREA	WETTED PERIMETER	N	VELOCITY	FLOW
97.4 SF	155.5 FT	0.050	2.0 FPS	201CFS
47.6 SF	20.7 FT	0.040	6.1 FPS	292CFS
969.0 SF	1103.2 FT	0.050	2.5 FPS	2,505CFS

INVERT	DEPTH	W. SURFACE	AREA	VELOCITY	FLOW	SLOPE
178.0 FT	2.8 FT	180.8 FT	1,114 SF	2.6 FPS	2,999 CFS	0.0090

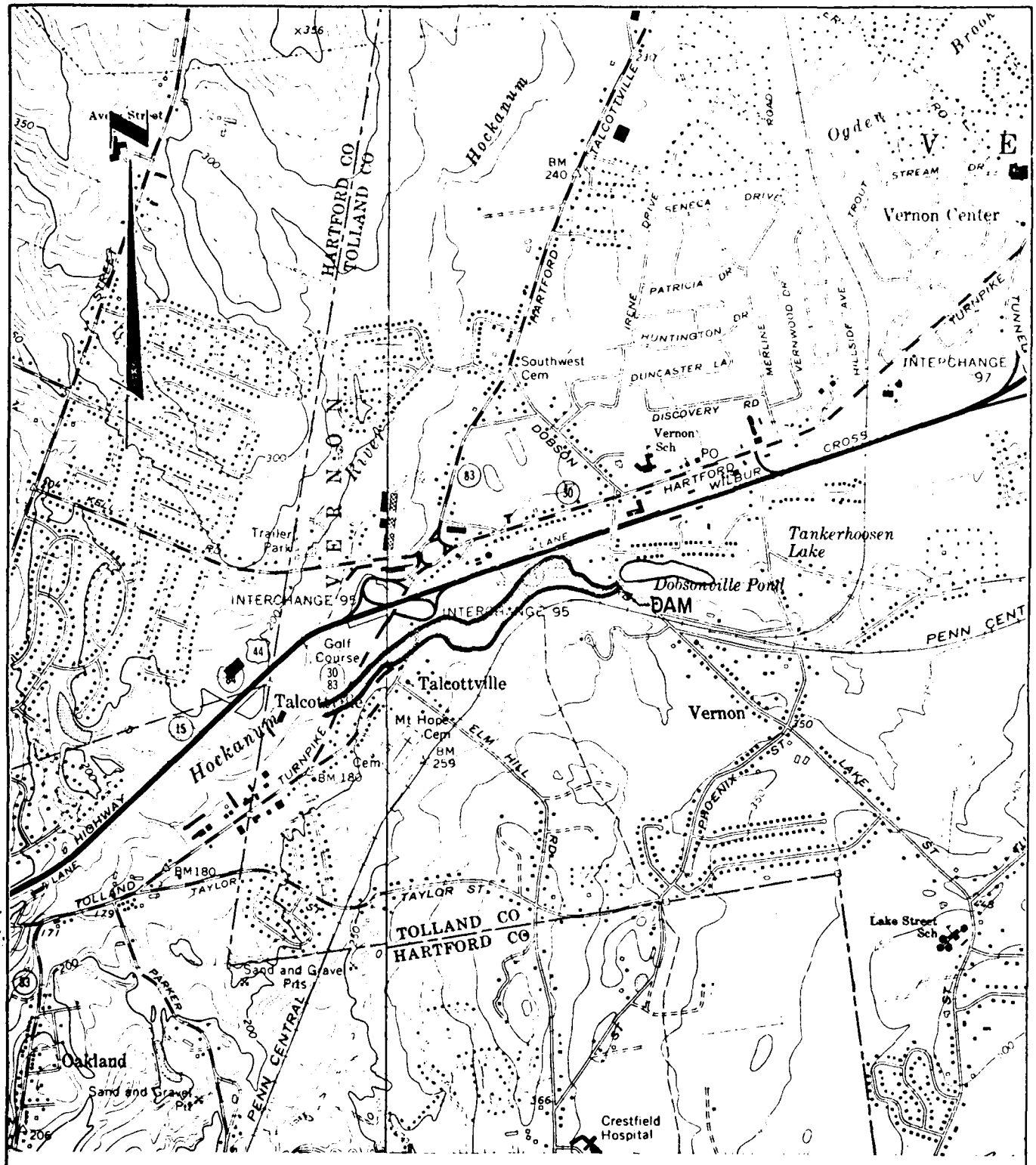
BASE FLOW = 245 CFS BASE STAGE = 180.1 FT.



DOBSONVILLE DAM
DRAINAGE MAP

VERNON , CONNECTICUT

FLAHERTY • GIAVARA ASSOCIATES, P.C.



DOBSONVILLE DAM
DAM FAILURE ANALYSIS
IMPACT AREAS

VERNON , CONNECTICUT

FLAHERTY • GIAVARA ASSOCIATES, PC

APPENDIX E

INFORMATION AS CONTAINED IN THE NATIONAL INVENTORY OF DAMS

INVENTORY OF DAMS IN THE UNITED STATES

(1) STATE	(2) IDENTITY NUMBER	(3) DIVISION	(4) STATE	(5) COUNTY	(6) CONGR DIST.	(7) STATE	(8) COUNTY	(9) CONGR DIST.	(10) NAME	(11) LATITUDE (NORTH)	(12) LONGITUDE (WEST)	(13) REPORT DATE DAY | MO | YR
CT	240	NED	CT	011	02				DARSONVILLE POND DAM	4149.5	7229.3	01MAY80

(14) POPULAR NAME	(15) NAME OF IMPOUNDMENT
	DARSONVILLE POND

(16) REGION	(17) BASIN	(18) RIVER OR STREAM	(19) NEAREST DOWNSTREAM CITY–TOWN–VILLAGE	(20) DIST FROM DAM (MI.)	(21) POPULATION
01	10	TH-HOCKANUM RIVER	TALCOTTVILLE	1	7000

(22) TYPE OF DAM	(23) YEAR COMPLETED	(24) PURPOSES	(25) STRUCTURAL HEIGHT (FT.)	(26) HYDRAULIC HEIGHT (FT.)	(27) IMPOUNDING CAPACITIES MAXIMUM (ACRE-FT.)	(27) IMPOUNDING CAPACITIES NORMAL (ACRE-FT.)
ITPG	1900	R	26	24	125	90

DIST	OWN	FED R	PRV/FED	SCS A	VFR/DATE
NED	N	N	N	N	

(28) REMARKS
20-ESTIMATE 21-MASONRY 22-ESTIMATE

(29) D/S HAS	(30) SPILLWAY CRI.V LENGTH	(31) TYPE	(32) WIDTH (FT.)	(33) MAXIMUM DISCHARGE (FT.)	(34) VOLUME OF DAM (CY)	(35) POWER CAPACITY INSTALLED (MW)	(36) POWER CAPACITY PROPOSED (MW)	(37) NAVIGATION LOCKS NO.	(38) LENGTH (FT.)	(39) WIDTH (FT.)	(40) LENGTH (FT.)	(41) WIDTH (FT.)	(42) LENGTH (FT.)	(43) WIDTH (FT.)	(44) LENGTH (FT.)	(45) WIDTH (FT.)
Y	80	U	67	342												

(46) OWNER	(47) ENGINEERING BY	(48) CONSTRUCTION BY
JOHN TALCOTT		

(49) REGULATORY AGENCY			
DESIGN	CONSTRUCTION	OPERATION	MAINTENANCE
CONN DEP	CONN DEP	CONN DEP	CONN DEP

(50) INSPECTION BY	(51) INSPECTION DATE DAY | MO | YR	(52) AUTHORITY FOR INSPECTION
FLAHERTY GIAVARA ASSOCIATES	07NOV79	P.L. 92-367

(53) REMARKS